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1855, and Dec. 7th, 1855, acknowledging receipt of late Nos. of the Proceedings and Journal and desiring missing Nos.

From the Boston Society of Natural History, dated 30th Jan., 1856, acknowledging receipt of late Nos. of the Proceedings.

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### *February 19th.*

Vice-President **Bridges** in the Chair.

Letters were read—

From the Lyceum of Natural History of New York, dated 18th Feb., 1856, acknowledging receipt of the Proceedings, Vol. 7, No. 12.

From the Smithsonian Institution, dated Washington, Jan. 7th, 1856, of the same tenor.

Dr. Le Conte presented for publication in the Proceedings, the following papers:—1. "Synopsis of the Mycetophagidæ of the United States;" 2. "Synopsis of the Phalacridæ of the United States;" 3. "Note on the genus Lithodus of Schoenheer;" 4. "Notice of three genera of Scarabæidæ found in the United States;" 5. "Analytical table of the species of Chlænius found in the United States;" all of which were referred to a Committee consisting of Mr. W. F. Rogers, Mr. Guex, and Dr. Zantzinger.

Mr. W. F. Rogers presented a paper for publication in the Proceedings, entitled, "Synopsis of species of Chrysomela and allied genera inhabiting the United States." Referred to Dr. Le Conte, Mr. Guex, and Dr. Zantzinger.

Mr. Cassin presented a paper for publication in the Proceedings, entitled, "Notes on North American Birds in the Collection of the Academy of Natural Sciences of Philadelphia;" which was referred to Dr. Wilson, Dr. Henderson, and Dr. Woodhouse.

Dr. Leidy presented a paper for publication in the Proceedings, entitled, "A Synopsis of Entozoa and some of their Ecto-congeners observed by the Author." Referred to Mr. J. P. Lesley, Dr. Le Conte, and Dr. Carson.

Also, a paper by the same, entitled, Notices of some remains of extinct Mammalia recently discovered by F. V. Hayden, in the 'Mauvaises Terres' of Nebraska. Referred to Dr. Henderson, Mr. Isaac Lea, and Dr. Wilson.

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### *February 26th.*

Vice-President **Bridges** in the Chair.

The Committees on Dr. Hallowell's paper, read 15th January; Dr. Leidy's paper, read 5th Feb.; on Dr. Le Conte's papers, read 19th Feb.; on Mr. W. F. Rogers' paper, read same date; on Mr. Cassin's paper, read same date; and on Dr. Leidy's papers, read same date, severally reported in favor of publication in the Proceedings.

## *Description of several species of Urodela, with remarks on the geographical distribution of the Caducibranchiate division of these animals and their classification.*

By EDWARD HALLOWELL, M. D.

Class REPTILIA.

Fourth order, Batrachia, Brogn.
Sub. class, Amphibiens Ichthyöides ou Nudipelliferes, Blainv.
Class Amphibia, Bonap.
Second order, Salamandræ, Bonap.
Second order, Dipnoa, Leuckart, Fitzinger.
First tribe, Dipnoa mutabilia.
Fifth family, Salamandroidea, Fitz.
Order, Ranæ. Second division, Ranidæ caudatæ, Wagler.
Second sub order, Batrachia gradientia, Merrem and Gray.
Batrachia. Third sub order, Urodèles, Dum.
First family, Atrètodères ou salamandrides.
Sub family, Ambystomina, Gray.
**Genus, Ambystoma, Tschudi.**

### AMBYSTOMA LATERALE, nob.

This animal is smaller than any of the species of Ambystoma with which we are acquainted, with the exception of A. macrodactylum, being about the size of Salamandra nigra, Green.

Color jet black above, black below, with a tinge of brown especially upon the throat; the sides of the body and tail are marked with numerous white spots about the size of a pin's head, and even larger, thickly agglomerated; they are also observed of greater dimensions upon the sides of the neck; the chin and throat present numerous white spots, smaller than those upon the sides; they occur, also, sparsely upon the abdomen; extremities spotted with white, both above and below; fingers and toes banded with the same; a gular fold; palatine teeth in a transverse, undulating, interrupted series, as in Ambystoma fasciatum, (See Dum. and Bib., pl. 101, fig. C.) passing behind the internal nares; no longitudinal rows of teeth; tongue attached in front and behind, free at its lateral edges; tail compressed, longer than the body; extremities slender, middle fingers of nearly equal length; first and fourth idem; first toe shorter than fifth; second than third, fourth than fifth; fingers and toes free, slender, depressed; ten distinct costal folds.

*Dimensions.*—Length of head 4 lines, breadth 2½; of body from gular fold to vent, 1 inch 2½ lines, (Fr.); of tail 1 inch 5 lines; length of anterior extremities 6 lines, of posterior 7.

*Habitat.*—Marquette, southern border of Lake Superior, specimen in Mus. of Acad, N. S., presented by Dr. John L. Le Conte, who found it in that region, with a fine specimen of Ablabes punctatus, Dum. and Bib. No mention is made of any species of Urodèles in the work on Lake Superior, by Professor Agassiz, with the exception of Plethodon erythronotus. The reptiles enumerated in it are Tropidonotus sirtalis and Tropidonotus erythrogaster, a species allied to rigidus, an undetermined species of Crotalophorus, probably tergeminus; Rana nigricans, Rana halecina, Rana sylvatica, Hylodes maculatus, Bufo americanus, Plethodon erythronotus and Menobranchus maculatus.* I have since found another specimen much older, and having a general brownish tint, (altered by alcohol,) but with the lateral spots quite distinct, among the reptiles of the Green collection presented to the Academy by Dr. Franklin Bache, with no indication of locality.

*General Remarks.*—The Ambystoma above described resembles none other of our well known species, and will, therefore, be readily recognized. Amb. punctulatum, Gray, (Cat. Br. Mus. Amphib. p. 37, No. 5,) is represented as lead colored, and *white* beneath with *distant* scattered white dots upon the cheek and upper part of sides. Its habitat is Monterey, California. It is unknown to us. Ambystoma laterale is somewhat similar in coloring to Sal. niger, Green, but that is a Plethodon, having a head and tail, and an arrangement of teeth altogether different; viz., two small arched rows behind the internal nares, the convexity presenting forward, converging toward each other, and separated by an interval, with two series of thickly set, longitudinal sphenoidal teeth, closely approximated, arranged somewhat like a brush, and separated from the vomerine by an interspace without teeth. The Ambystoma nigrum of Dum. and Bib., is also a Plethodon, and is, no doubt, identical with Plethodon fuscum as the synomymes show; (Sal. niger, Green, Desmognathus niger, Baird,) and Plethodon fuscum* being the same, they not having seen the animal. Salam. erythronota, Green is erroneously placed by Gray, (Cat. Br. Mus. Amphib. Grad, p. 37. No. 9.) among the Ambystomata. It is a Plethodon as Dumeril and Bibron have it. Ambystoma quadrimaculatum and Ambystoma salmoneum, Dum & Bib. belong to other genera. The first is a Plethodon, the latter has the transverse and longitudinal rows of teeth in a continuous series, in this respect resembling none other of our Urodèles with the exception of Sal. rubra, Green, (Bolitoglossa rubra, D. & B.) Pseudotriton rubra, Tschudi. Dum. & Bib. have also put glutinosum and auriculatum in the genus Cylindrosoma. They are both Plethodonts.†

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*To these may be added Coluber occipito-maculatus Storer. (Col. venustus, Hallowell, Proceed. Acad. N. S., vol. iii., p. 280, pl. )

The genus Salamandra does not exist, so far as is known, on the American Continent. On the other hand, Ambystoma is an exclusively American genus, and has a wide range. Its most northern limit at present, is Lake Superior; its southern, New Mexico. It is found in Maine, Pennsylvania and South Carolina, (punctatum or venenosum Bart.) Massachusetts, Ohio, Maryland Virginia, Georgia, Mississippi, (opacum Grav. or fasciatum, Gr.) New York and New Jersey, (tigrinum,) Oregon, (macrodactylum, Bd.) Michigan, Wisconsiu and Illinois, (luridum) ingens (Xiphonura Tsch.) New Orleans.

It is a remarkable fact that none of the animals belonging to the sub-order Batrachia gradientia of Merrem and Gray, (Batrachia urodela, Dum. and Bib.,) and especially the Urodèles atrètodères or Salamandrides, have been discovered in America south of Mexico, although so numerous in the northern part of that great continent. Nor are any of the caducibranchiate-tailed batrachians known to exist in the East Indies, Persia, China, Australia, Borneo, Sumatra, Java, New Zealand, the Phillipines, New Holland, New Guinea, West or Southern Africa, or, so far as is known, with the exception of Japan and Loo Choo, in any of the numerous islands of the Atlantic‡ and Pacific Oceans. They are found in the south of Spain and northern part of Africa, (Pleurodeles,) the islands of the Mediterraneam, varions parts of England, France, Germany and Italy, (Salamandra, Triton, Geotriton, Euproctus,) the north of Africa, Syria, (Triton ?) and Japan, (Cynops, Onychodactylus, Ellipsoglossa,) but appear to be more abundant in North America, and comprise genera not yet observed in other parts of the world, viz., Ambystoma, Tsch., which contains many species, Plethodon, Tsch., Desmognathus, Bd., Spelerpes, Raf., Taricha, Gray, Pseudotriton, Tsch., Hemidactylium, Tsch., Batrachoceps, Bonap., Ensatina, Gray, and Diemyctylus, Raf

There is not only not any true Salamandra in the United States, but no Triton, properly so called, for the Triton dorsalis and symmetricus of authors is anatomically quite different from the Tritons of Europe.

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*"As universally yellowish brown or black," Eights, Dekay, Nat. Hist. of New York, Reptiles, p. 85; the brown specimens, the young according to Dr. Holbrook.

†The Salamandra Jeffersoniana of Prof. Holbrook is no doubt a Plethodon, perhaps identical as well as S. Jeffersoniana, Green, with Plethodon glutinosus, Tschudi represents the teeth as transverse in his Xiphonura Jeffersoniana. Is X. Jeffersoniana, Tsch. identical with Ambystoma ingens ?

‡Prof. Schlegel states that a species approaching S. longicauda was brought from Martinique by Mr. Plèe, Fauna Japonica, Reptiles, p. 119.

The tongue in the genera Spelerpes, Pseudotriton (Mycetoglossus, Bib., Bolitoglossa, D. and B.) and Batrachoceps, Bonap., is bolitoglossal or mushroom-shaped, being quite free and supported upon a central pedicel; but the arrangement of the teeth is not the same, the transverse and longitudinal rows being separated by an interval in Spelerpes and Batrachoceps, but, as before stated, are in a continuous series in Pseudotriton. The only European genus which agrees with the first named genera in the form of tongue and arrangement of teeth, is Geotriton, the tongue in the Tritons proper being attached both in front and *posteriorly*, and having no transverse teeth whatever ;[*] but in Geotriton the toes are very distinctly palmated, which is not the case in either Batrachoceps or Spelerpes, so that not only the species of Urodèles, now under consideration, are different, but the genera also, no two being identical in both continents; further, if we restrict the families more fully than has hitherto been done, we might say that the only sub-families of this group of reptiles common to both Europe and America are the Bolitoglossidæ, or the mushroom-tongued Urodèles, comprising in the former several genera, in the latter but one, and the Tritonidæ.

It is also worthy of remark that, although these animals are known, (instead of having the power to remain unharmed amidst the flames, according to the opinion of the vulgar, or of " inhabiting the rivers of hell,"[†]) to be capable of enduring extreme cold, (the Salamandra atra existing near the region of snow in the Alps,) they have not yet been discovered very far north. None of the American species have been found north of Lake Superior except Plethodon erythrynotus, and that at no great distance. In Europe the most northern limit is Sweden. None of these reptiles, we believe, were observed in the recent expedition of Dr. Kane to the Arctic regions.[‡]

In making out a synopsis of the Urodèle Batrachians in the collection of the Academy, I had laid aside for future examination the Triton porphyriticus, of which we have but a single specimen and which is really an Ambystoma. The true position of this animal appears to have been quite doubtful. Prof. Green describes it as a Salamandra, Prof. Holbrook, a Triton, Mr. Gray, a Spelerpes, with a note of interrogation, and Prof. Baird, in his valuable synopsis of the group of reptiles to which it belongs, states that its place probably is among the Ambystomata, but previously remarks that Pseudotriton salmoneus and the *Salamandra porphyritica* of Green will very probably turn out to be identical. Should this be the case, Pseudotriton salmoneus becomes P. porphyriticus, and the species now described will require a new name.

### AMBYSTOMA PORPHYRITICUM.

*Syn.* Sal. porphyritica, Green, Macl. Lyceum, p. 3. pl. 1. Sal. porphyritica, Harlan, Med. & Phys. Res. p. 98. Triton porphyriticus, Holbrook, N. Am. Herp., vol. v. p. 83.

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[*] Dr. Holbrook is in error in stating that Triton dorsalis has transverse teeth.

[†] In allusion to the Tartarean *habitat* of these creatures, a writer in the London Quarterly Review remarks, that Scott's conversation " was rich in ease, sense and humor, while theirs (certain smart and perverse, but unwholesome disputants) was like the breakfasts in military novels, which seem to consist chiefly of devilled kidneys, grilled bones, and other fierce and *salamandrine* elements."

The Salamanders are covered with numerous pores, which exude an acrid and glutinous fluid, so that if thrown upon live coals they become blackened, but of course the animal is soon destroyed.

[‡] The most northern limit of reptile life observed by Sir J. Richardson, (see boat voyage in search of Sir John Franklin,) was the north bend of Porcupine River, within the Arctic circle, where a snake was found. The tortoises disappear beyond the 51st degree, at the south end of Lake Winnepeg, (Emys geographica and probably the snapper,) the frogs at 68°, (Bufo americanus and Hyla versicolor )

*Char.* General form more slender than that of most of the Ambystomata. Head small, convex above, rounded in front; eyes latero-superior, prominent; tongue ovoid, firmly attached in front and posteriorly, more free at the sides; internal openings of the nares moderately large; teeth in a transverse uninterrupted row, arched in front,* concave posteriorly; no longitudinal rows of teeth; a gular fold; no parotids; skin perfectly smooth to the touch, presenting innumerable small pores when observed with a glass; of a uniform brownish color above, lighter below; no line of lateral pores between the axilla and groin; fingers and toes free, rather slender, depressed, fourth toe longer than the third; tail much compressed, shorter than head, neck and body.

*Habitat.*—Wabash. One specimen in Mus. Acad. Nat. Sc., presented by Dr. McMurtrie. Prof. Green's specimens were found in French Creek, near Meadville, Crawford County, Pennsylvania.

*Dimensions.*—Length of head 4 lines; breadth 3½; length of neck and body to vent 1 inch 7 lines; (Fr.) of tail 1 inch 9 lines.

*Gen. remarks*—The whitish spots mentioned by Prof. Holbrook, arranged in a linear longitudinal series along the flanks, and also by Dr. Green, are not visible in the specimens above described, probably from long immersion in alcohol. It is a larger animal than Ambystoma laterale, and differs from it much in the arrangement of the transverse teeth and in the coloration. A good figure and excellent description of it will be found in Prof. Holbrook's work on the North American Reptiles.† The Triton porphyriticus of Dr. Dekay (Nat. Hist. of New York, Reptiles, p. 85) is Plethodon glutinosus, judging from the description,‡ no mention being made of the teeth. The arrangement of the teeth in the species of Ambystoma varies considerably, and with the size of the internal nares, appears to form very good *specific* characters. Dr. Green's description corresponds in almost every important particular with the animal above described, except the head, which, instead of being "rather large," is on the contrary small. He states that "the color on the back varies very much in different specimens, some being dark chocolate, others of a much lighter color, and others again of a pale brown; the young is nearly white, with a middle line on the sides extending from the anterior to the posterior extremities," (Macl. Lyc. p. 3.) Prof. Holbrook's specimen was 4 inch. 5 lines in length; Dr. Green's between 5 and 6 inches. Prof. Holbrook's drawing is much more accurate than that of Prof. Green, which, although more highly finished, does not correspond very closely with the specimen in the collection of the Academy, the head resembling more that of Pseudotriton salmoneus, (Sal. salmonea, Storer.)§ Prof. Holbrook observes that he had never seen the animal alive, but the coloring was taken from the original of Dr. Green.

Some years ago I described in the Proceedings of the Academy, a new Salamander from California, under the name lugubris. Mr. Gray, in the Catalogue of the British Museum, places it along side of Taricha, with a note of interrogation. It is however very different from Taricha. The species was subsequently made the type of a new genus by Prof. Baird, with the name Aneides.

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*In glutinosus this is not the case; the vomerine teeth are separated by a wide interval and take another course; sphenoidal teeth in glutinosus, none in Ambystoma; the fingers and toes are also different.

† The palate, he observes, "is armed with a row of *transverse* teeth."

‡ He says, tail cylindrical, scarcely compressed. In porphyriticus the tail is much compressed; in P. glutinosus cylindrical; the shape of the tail and the teeth distinguish it at once from glutinosus.

§ The small eyes and irregular whitish spots in the description do not apply to Salmoneus; the snout is described as obtuse, which it is in porphyriticus; in the drawing it is truncate.

The following notes are somewhat more precise than those of the former description.

### Sub. fam. PLETHODONTIDÆ.

### Gen. Aneides, Baird.

*Char.*—Head large, swollen at the temples, snout angular, eyes very prominent; tongue obcordate, more or less truncate posteriorly, attached in front, and along the middle, sides quite free, quite free posteriorly, but less so than at the sides; maxillary teeth greatly developed, especially those of the lower jaw, which are spear-shaped, sharp-pointed, more or less convex anteriorly, concave posteriorly, with a ridge in the middle, about ¾ of a line in length; vomerine teeth in two convergent rows, behind the internal nares meeting posteriorly, their convex surfaces presenting inward*; sphenoidal teeth very numerous, sharp pointed, thickly set like a brush in *two* rows, closely in contact in the anterior third, posteriorly a very narrow linear interspace, not enlarged behind; in the *original* specimen, this narrow interspace is not so distinct, so that they might almost with propriety be described as a single row; extremities slender; fingers and toes slightly compressed, free; 1st finger much shorter than 4th; 2d shorter than 3d; 1st toe much shorter than 5th; 2d than 3d; 3d and 4th of equal length; skin smooth, costal grooves well marked, twelve or thirteen in number, tail round, tapering to a point, very slightly compressed at tip, about same length as head, neck and body.

### Aneides lugubris.

*Syn.*—Sal. lugubris, Hallowell, Proceed. Acad. Nat. Sci., vol. iv. p. 126. Aneides lugubris, Baird, Iconographic Encyclopœdia, vol. ii. 1859, 1st edition, p. 256. Taricha lugubris? Gray, Cat. Br. Amph., p. 26, No. 2.

*Char.*—Color dark olive above, yellow below, without spots or other markings, a row of small, circular spots on each side.

*Dimensions.*—Length 4½ inches.

*Habitat.*—Monterey and San Francisco, Upper California. Two specimens in Mus. Acad. Nat. Sci. Presented by Dr. Townsend and Mr. Heermann.

The U. atrètodères may be subdivided into the following groups, which will perhaps facilitate their study.

### a. With longitudinal teeth.

### 1. SALAMANDRIDÆ. European.

Tongue rather large, attached in front and posteriorly, free at the sides; toes 4—5.

1 gen. Salamandra. 3 sp. maculosa, corsica, atra.

### 2. SEIRANOTIDÆ. European.

Tongue well developed, oblong, rounded in front, broader and almost truncate posteriorly, *free in its posterior half*, less so laterally, attached in front, toes 4—4.

1 gen. Salamandrina. 1 sp. S. perspicillata.

### 3. PLEURODELIDÆ. N. African and S. European.

Tongue small, subcircular, *free posteriorly*, and at the sides, attached in front; toes 4—5; ribs not rudimentary, but much developed, perforating even the integuments.

### 4. TRITONIDÆ. European, N. American, Asiatic.

Tongue fleshy, papillose, well developed, *attached in front and behind*, free at the lateral edges; toes 4—5.

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* The true position of this animal is among the Plethodonts, that of Taricha the teeth of which are in two *slender longitudinal* series, *commencing on a line with the inferior margin of the internal nares*, about midway between them, but diverging widely posteriorly, among the *Tritonidæ.*

5 gen. Euproctus, Cynops, Diemyctylus, Taricha, Triton. 10 sp. E. Rusconi, C. pyrrhogaster, D. viridescens,* Taricha torosus, Triton alpestris, cristatus, marmoratus, palmatus? punctatus, pyrenæus and perhaps others.

### 5. ELLIPSOGLOSSIDÆ. Asiatic.

*Tongue oblong oval, free at the sides only;* toes 4—5.
1 gen. Ellipsoglossa. 1 sp. E. nævia.

### *b.* With transverse and longitudinal teeth.

### 6. PLETHODONTIDÆ. N. American.

Tongue broad oval, well developed, free at its lateral edges and posteriorly, attached in front; toes 4—5.
3 gen. Desmognathus, Aneides, Plethodon. 6 sp. D. niger, auriculatus, A. lugubris, P. glutinosus, erythronotus and quadrimaculatus?

### 7. BOLITOGLOSSIDÆ. N. American and European.

Tongue of moderate size, *mushroom-shaped, supported by a central pedicel;* toes 4—5 and 4—4.
4 gen. Batrachoceps, Spelerpes, Pseudotriton, Geotriton. 9 sp. B. quadridigitatus, attenuatus, S. longicauda, gutto-lineata, bi-lineata, mexicana, P. ruber and salmoneus, G. fuscus.

### 8. HEMIDACTYLIDÆ. N. American.

Tongue oval, attached in front and along the middle, more free posteriorly; toes 4—4.
1 gen. Hemidactylium. 1 sp. H. scutatum.

### *c.* Transverse, but no longitudinal teeth.

### 9. AMBYSTOMIDÆ. N. American and Asiatic.

Tongue ovate, moderately free at its edges, slightly so in front, attached posteriorly; toes 4—5.
2 gen. Onychodactylus, Ambystoma, 15 sp. O. japonicus. A. punctatum (venenosum Bart.) opacum Grav. (fasciatum Green) laterale, pophyriticum, macrodactylum, punctulatum,? tigrinum, luridum, nebulosum, mavortium, episcopus, (an hypoxanthus Raf.?) talpoideum, proserpine, tenebrosum, and no doubt others.

## *Description of two Ichthyodorulites.*

By JOSEPH LEIDY, M. D.

STENACANTHUS NITIDUS Leidy. The species of a genus supposed to be distinct from those which have been described, is indicated by an ichthyodorulite, discovered by Charles E. Smith, Esq., in association with the remains of *Holoptychius*, in the old Red Sandstone formation of Tioga county, Pennsylvania. The specimen is partially imbedded in a mass of red sandstone; and it has its point broken off and is otherwise mutilated. The spine is straight throughout and indicates no disposition to curve. In its perfect condition it appears to have been about three inches in length, by about six lines in breadth at its base ; and it gradually tapers towards the apex. The anterior margin is convex. The posterior border at the edge of the exposed surface of the fossil is furnished with a row of closely set serrations, directed obliquely downward, of which eight may be counted within the space of seven lines. Whether there is a second row of serrations, the imbedded state of the very friable bone in a hard matrix will not permit me to determine.

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* D. viridescens Raf. (Tr. dorsalis) and D. miniatus (Tr. symmetricus) are probably the same, the orange color and roughness being appearances which the female more especially presents after a long sojourn on land. At least this may be inferred from what is known of the habits of the European Tritons. Schlegel says that such is the case with T. punctatus. He also remarks that he has specimens of marmoratus (one of the very roughest of the Tritons, if we may judge from the specimen in the Bonaparte collection) perfectly smooth, and we have those of dorsalis smooth and more or less rough. The Triton marmoratus, according to Kaup, leaves the water in June and becomes a land animal; the crests of the male disappear, and the tail, from a swimming organ, becomes round.

The broad surface which is exposed in the specimen, so far as it is preserved, is longitudinally furrowed ; and about three-fourths of an inch from the broken summit it exhibits a transverse zigzag fissure, which may probably be the result of an original fracture, although it has very much the appearance of being an articulation.

CYLINDRACANTHUS ORNATUS Leidy. On several occasions fragments of apparent fossil bones have been submitted to my inspection, the character of which has exceedingly puzzled me, and although I now view them as portions of ichthyodorulites, I am not positive of the correctness of my conclusion. The specimens alluded to are found in the cretaceous formations of New Jersey and Alabama. The most perfect one was obtained by W. Taylor, Esq., from near Pemberton, Burlington co., New Jersey. It is over three inches in length with the extremities broken off, is straight and gradually tapering, and is perfectly circular in transverse section. At the thicker end it is six and one quarter lines in diameter, and at the other end five lines. The centre presents a double tubular perforation of comparatively small calibre. The surface is invested with a thick, enamel-like layer, which is dense, brittle, and shining, and deeply fluted ; the intervening ridges being of nearly uniform diameter, with pairs occasionally converging into single ones in their course.

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## *Synopsis of the* MYCETOPHAGIDÆ *of the United States.*

### By JOHN L. LE CONTE, M. D.

The genera of this family of Coleoptera which have been thus far discovered in the country, are Mycetophagus, Litargus, Typhæa, and Diphyllus. Of the latter genus two species are known to me, one found by Dr. Melsheimer in Pennsylvania, and the other by me at Tucson, in the valley of the Gila. I regret that the absence of the specimens prevents me from making them known on the present occasion. Thus if Diplocœlus be combined with Diphyllus as recommended by Lacordaire (Gen. Col. 2, 447,) the only genus left unrepresented in the United States, will be Triphyllus. Of the described species none are unknown to me.

The genera may be thus separated :

Tarsi maris antici 3-articulati ; (thorax versus latera haud carinatus)
Oculi transversi ;
Antennarum clava elongata, multiarticulata — Mycetophagus.
{ Antennarum clava triarticulata ; (elytra confuse punctata) — Triphyllus }
Oculi rotundati ; antennarum clava triarticulata.
Ligula membranea — Litargus.
Ligula cornea — Typhæa.
Tarsi omnes subpentameri ; antennæ clava biarticulata ; (thorax utrinque bicarinulatus) — Diphyllus.

### MYCETOPHAGUS Hellwig.

A. Antennæ extrorsum sensim incrassatæ ; thorax lateribus haud serratus.

1. M. punctatus, ovalis infra rufo-testaceus, capite thoraceque nigris dense punctatis, elytris flavis macula scutellari, margine laterali, macula discoidali mox pone medium, fasciaque lata ante apicem nigris, ore antennisque rufescentibus, his clava nigra, ad apicem testacea ; pedibus flavo-testaceis. Long ·21—·25.

Say, Journ. Acad. Nat. Sc., 5, 260.
Middle and Southern States.

2. M. flexuosus, ovalis, testaceus, capite thoraceque nigris confertim punctatis, elytris flavis, puncto humerali, macula communi scutellari, margine laterali, maculis extrorsum confluentibus versus medium, fasciaque lata dentata ad dodrantem nigris, apice ipso piceo; antennis testaceis, clava nigro-picea ad apicem testacea. Long. ·15.

Say, Journ. Acad. Nat. Sc., 5, 260.

Middle and Western States. Allied to the preceding, but smaller and with the posterior band broader, less near the apex, and anteriorly dentate, and with three confluent spots forming an irregular external transverse band near the middle.

Varies in having the black spots very much extended so as to cover the greater part of the elytra which then become marked:

*a.* With a large orange colored humeral spot enclosing a black dot, and extending inwards below the scutel nearly to the suture; two very small spots a little behind the middle, and a larger rounded one very near the apex. Alabama, Mr. Haldeman.

*b.* With a quadrate humeral orange colored spot enclosing a black dot, and a rounded one very near the apex. Indiana, Mr. J. P. Wild.

3. M. pluriguttatus, ovalis longiusculus, niger, capite thoraceque dense punctatis, elytris guttis pluribus flavis parvis præcipue mox pone medium ornatis, antennis pedibusque obscure ferrugineis. Long. ·2.

San Jose, California. The posterior third of the elytra is usually free from spots, sometimes a very small one is seen near the apex.

4. M. Melsheimeri, elongatus, ferrugineus, capite thoraceque confertim punctatis nigris, elytris flavis macula communi scutellari, margine lobato ad apicem latiore, macula transversa communi media cum margine bis confluente nigris, (macula hac ultima sæpe deficiente), fortiter punctato-striatis, antennis medio obscurioribus. Long. ·17.

*Mycetophagus bimaculatus* Mels. Proc. Acad. Nat. Sc., 2, 114 (in parte).

Pennsylvania, Dr. Melsheimer; Alabama, Haldeman. I have been compelled to change the name proposed by Dr. Melsheimer, as by an unfortunate error his description was made from two distinct species, one being M. flexuosus, while the other is the present: it, however, affords me much pleasure to commemorate his long continued and successful labors in American Entomology by attaching his name to this species, which he was the first to detect.

5. M. obscurus, elongatus, piceo-niger, capite thoraceque dense punctatis, elytris fortius punctato-striatis; antennis piceis ad basin et apicem ferrugineis, pedibus piceis tibiis tarsisque rufescentibus. Long. ·17.

One specimen, Georgia. Of the same form and with the same sculpture as M. Melsheimeri.

B. Antennæ articulis 5 ultimis crassioribus; thorax lateribus serratis.

6. M. pluripunctatus, elongatus, ovalis, nigro-piceus, capite thoraceque nigris dense punctatis, elytris flavis margine, macula communi scutellari, guttisque plurimis confluentibus nigris; abdomine pedibus antennisque ferrugineis. Long. ·16.

Middle and Southern States: the spots sometimes form several narrow, irregular, transverse fasciæ.

7. M. pini, elongatus ovalis, supra niger, subtus cum antennis pedibusque rufis. Long. ·14—·16.

Ziegler, Proc. Acad. Nat. Sc., 2, 270.

Middle and Southern States, not rare.

C. Antennæ articulis 4 ultimis maioribus; thorax lateribus haud serratus.

8. M. obsoletus, ovalis infra rufus, supra niger, elytris fascia dentata antica basin attingente, ad suturam paulo interrupta, macula laterali ad medium,

duabus pone medium quartaque ante apicem rufis; antennis testaceis, articulis 8—10 nigris, ultimis tribus abrupte maioribus. Long. ·2.

Mels. Cat. Descr. Col. of U. S., 47.

*Tetratoma obsoleta* Melsheimer, Proc. Acad. Nat. Sc. 2, 113.

Middle States. The anterior fascia is sometimes broken into two spots: on the other hand, the spot behind the middle sometimes combine into a dentated fascia.

9. M. bipustulatus, longiusculus magis convexus, ovalis, supra piceus, infra obscure rufus, elytris guttis duabus pone basin sæpe confluentibus, altera magna obliqua pone medium obscure rufis, antennis articulis quatuor ultimis distincte maioribus. Long. ·13.

Melsheimer, Proc. Acad. Nat. Sc. 2, 114.

Middle States, not rare. In the Catalogue of Described Coleoptera of the United States, Dr. Melsheimer has changed the name of this species to M. bisignatus, under the impression that the name had been previously employed. I do not, however, find any other described species named bipustulatus, and have therefore replaced the name first given.

### LITARGUS Er.

1. L. tetraspilotus, ovalis sub-convexus, nigro-piceus, pubescens, elytris distinctius sat dense punctatis seriatim pubescentibus, macula magna antica alteraque postica rufo-testaceis, margine thoracisque angulis posticis rufescentibus, antennis tibiis tarsisque testaceis. Long. ·08.

A very pretty little species, found in the Southern and Western States. Broader than L. didesmus, and readily known by the hairs of the elytra being arranged in rows.

2. L. sexpunctatus, elongatus ellipticus depressus, niger, pubescens, elytris densius subtilius punctatis, pubescentibus, pilisque longioribus parce seriatis, macula humerali, altera pone basin, tertiaque maiore obliqua transversa ad dodrantem testaceis, tarsis antennarum basi et apice testaceis. Long. ·09.

Er. Ins. Deutschl. 416.

*Mycetophagus sexpunctatus* Say, Journ. Acad. Nat. Sc. 5, 261.

Middle and Southern States.

3. L. transversus, subelongatus ellipticus depressus niger, pubescens, elytris subtilius punctatis, pilis seriatis, macula humerali, altera pone basin, fasciaque angusta transversa dentata ad dodrantem testaceis; antennarum basi pedibusque piceo-testaceis. Long. ·10.

One specimen found at San Jose, California.

4. L. infulatus, subelongatus, ellipticus, subdepressus piceus, pubescens, thoracis elytrorumque marginibus indeterminate testaceis, his maculis utrinque duabus ad basin, altera pone basin, fasciaque angusta obliqua subdentata postica pallidis, confertim punctulatis, subseriatim pilosis; subtus testaceus. Long. ·07.

One immature specimen found in Illinois, by Mr. Willcox. This species seems by the arrangement of the colors to be very distinct from any other found on the Atlantic slope. It differs from the preceding by the distinct punctuation of the elytra, and from the next by the same characters, and by the posterior band being narrow, as well as by the anterior pale spots not occupying nearly half the surface of the elytra.

5. L. balteatus, subelongatus, ellipticus subdepressus, rufo-piceus pubescens, capite elytrisque obscuris, his trientem anticam, macula parva laterali fasciaque postica obliqua lata dentata pallidis, confertim subtiliter punctulatis; antennis pedibusque pallide testaceis. Long. .07—·085

Colorado river, California, near the junction of the Gila. The pale markings of the elytra are so large that they may be described as pale with the apical fourth and a broad band at the middle obscure; the latter is dilated externally and includes a pale spot. The hairs of the elytra do not appear to be arranged in rows.

6. L. **didesmus**, ellipticus paulo convexus, nigro-piceus fortius dense punctatus, pubescens, elytris fascia subbasali alteraque pone medium obscure rufo-testaceis, haud seriatim pubescentibus; antennis pedibusque piceo-testaceis. Long. ·07—·09.

Er. Ins. Deutschl. 416.

*Mycetophagus didesmus* Say, Journ. Acad. Nat. Sc. 5, 261.

Middle and Southern States; common.

7. L. **nebulosus**, ellipticus paulo convexus, subtus nigro-piceus, supra obscure piceo-testaceus, fortius punctatus pubescens, elytris piceo-nebulosis, antennis pedibusqe piceo-testaceis. Long. ·06—·08.

Maryland; Dr. Zimmermann and Mr. Wild. Broader, more convex and less densely punctured than L. didesmus. The dark marks of the elytra are sometimes very indefinite; in pale colored specimens they are more distinct, forming a spot on each elytron partly surrounding the humerus, and two transverse undulated bands, the first a little before the middle, and the second at the second third of their length: these bands do not reach the sides.

### Typhæa Curtis.

T. **fumata**, elongata, ovalis paulo convexa, ferruginea, luteo-pubescens, elytris subtiliter punctato-striatis, punctulatis, seriatim pilosis. Long. ·1—·11.

Curtis, Brit. Ent. 15, pl. 702. Er. Ins. Deutschl. 418, (ubi synon. Europ. invenies).

*Dermestes fumatus* Linn. Syst. Nat. 2, 564.

*Cryptophagus gilvellus* Mels. Cat. Descr. Col. of U. S. 45.

*Cryptophagus crenatus*|| Mels. Proc. Acad. Nat. Sc. 2, 114.

Distributed by commerce over all parts of the world. The last synonyms are known to me by a specimen kindly communicated by Dr. Melsheimer; they were incorrectly referred by me, (Proc. 7, 217,) to Litargus.

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## *Synopsis of the* Phalacridæ *of the United States.*

By John L. Le Conte, M. D.

In this family are contained four genera, first separated by Erichson; and since all with the exception of Tolyphus are found in our territory, I have here transcribed the table of genera given by him. (Ins. Deutschl., 108.)

| | | |
|---|---|---|
| 1. Tarsi acquales; Tibiæ calcaribus | obsoletis | PHALACRUS. |
| | distinctis | TOLYPHUS. |
| 2. Tarsi postici elongati, articulo 1mo | 2ndo breviore | OLIBRUS. |
| | 2ndo longiore | LITOCHRUS. |

### Phalacrus Payk.

Palpi maxillares articulo ultimo cylindrico: tibiæ compressæ spinulosæ calcaribus obsoletis: tarsi æquales, articulo 1mo breviusculo: femora compressa inferne ciliata.

Usually shorter and more obtuse than Olibrus; the sutural stria in the native species is distinct, and the club of the antennæ elongate, with the last joint obtusely rounded at the tip.

A. Thorax ad basin distincte licet subtilissime marginatus.

1. P. **seriatus**, ovalis paulo convexus, nitidus niger, elytris confertim seriatim punctulatis, versus basin fere lævibus; antennis ad basin palpisque testaceis, Long. ·1.

One specimen, Kansas. Longer and less convex than the other species, and known by the testaceous palpi.

2. P. **ovalis**, ovalis convexus, nitidus niger, elytris obsoletissime substriatis, prope strias seriatim subtilissime punctulatis; antennis ad basin testaceis. Long. ·08.—·10.

Two specimens, San Diego, California. The body tapers a little posteriorly in

the male, but is regularly oval in the female. Differs from the next by the longer form.

3. P. penicillatus, breviter obtuse ovalis, convexus, niger nitidus, elytris obsoletissime substriatis, prope strias seriatim subtilissime punctulatis: antennis ad basin piceis. Long. ·13.
Say, Journ. Acad. Nat. Sc., 4, 91.
Kansas and California. By its larger size this species may be distinguished.

4. P. politus, breviter obtuse ovalis, niger nitidus, elytris obsoletissime substriatis, prope strias subtilissime seriatim punctulatis, antennis piceis, ad basin palpisque testaceis. Long. ·08.—·09.
Mels. Proc. Acad. Nat. Sc., 2, 102.
Middle and Southern States, abundant. Very similar in form and sculpture to the preceding, but differs by the smaller size and testaceous palpi. The male is slightly narrowed behind.

5. P. pumilio, breviter obtuse ovalis, niger nitidus, elytris obsoletissime substriatis, prope strias subtilissime seriatim punctulatis, tibiis tarsis palpis antennisque fusco-testaceis, his clava obscura. Long. ·05.
Two specimens, Georgia: very considerably smaller than P. politus, which it otherwise resembles.

B. Thorax ad basin vix conspicue marginatus.

6. P. simplex, ovalis convexus postice angustatus, niger nitidus elytris obsoletissime substriatis, antennis ad basin piceis. Long. ·10.
One specimen, Kansas. Nearly of the same form as P. ovalis, but somewhat attenuated behind, and without any rows of fine punctures upon the elytra, except very near to the apex.

### OLIBRUS Er.

Palpi maxillares articulo ultimo ovali; tibiæ tenues, calcaribus apicalibus conspicuis; tarsi postici reliquis longiores, articulo secundo longiusculo; femora haud ciliata.

A. Metasternum antice productum, cum mesosterno connatum, protuberans; (elytra striis internis duabus profundioribus).

1. O. bicolor, oblongo-ovatus, convexus, niger nitidissimus, elytris macula rotundata anteapicali ornatis, substriatis, striis duabus internis distinctis; infra rufus, antennis pedibusque testaceis. Long. ·08.—·11.
Er. Ins. Deutschl. 116. (ubi synon. invenies.)
*Phalacrus bicolor* Gyllenhal. Ins. Suec. 3, 431.
Middle States, not common. Perhaps imported from Europe.

2. O. striatulus, oblongo-ovatus convexus, niger nitidus, elytris tenuiter striatis, interstitiis biseriatim subtilissime punctulatis; subtus cum antennis pedibusque rufo-testaceus. Long. ·10.
Middle States and Kansas. Of nearly the same form as the preceding, but a little narrower with more distinct elytral striæ.

3. O. rufipes, oblongo-ovatus, convexus, niger, nitidus capite punctato, elytris tenuissime striatis, interstitiis biseriatim obsolete punctulatis: subtus nigro-piceus, antennis pedibusque rufis. Long. ·08.
One specimen, Shoalwater Bay, Oregon, Dr. Cooper. Of the same form as the preceding, with the head more distinctly punctured.

4. O. semistriatus, oblongo-ovatus, convexus, nigro-piceus, nitidus, capite vix punctato, elytris striis antice obliteratis versus apicem valde distinctis, interstitiis biseriatim obsolete punctulatis; subtus cum antennis pedibusque rufo-testaceus. Long. ·08.
One specimen from Kansas. Also of the same form as the preceding.

5. O. rubens, ovalis convexus, ferrugineus nitidus, capite fere lævi, elytris

striis duabus solis internis tenuibus distinctis, obsoletissime seriatim punctatis, pectore obscuriore, antennis pedibusque testaceis. Long. ·09.

One specimen, Georgia, which by its more regularly oval form differs from all the rest of this division.

B. Metasternum haud productum; (elytra stria suturali profunda.)

6. O. obtusus, breviter ovalis, convexus, niger nitidus, subtus cum pedibus rufo-piceus, antennarum clava fusca. Long. ·07.

One specimen, San Jose, California. Resembles Phalacrus in its form, but the palpi and tarsi are those of this genus. The prosternum is ciliate with long hairs behind, which projecting over the mesosternum cause the latter to appear sulcate.

7. O. apicalis, oblongo-ovatus convexus, supra nigro-piceus, ore, thorace ad latera, elytrisque ad latera et postice indeterminate piceo-testaceis; subtus, pedibus antennisque testaceis. Long. ·07.—·09.

Lec. Agassiz' Lake Superior, 222.

*Phalacrus apicalis* Mels. Proc. Acad. Nat. Sc. 2, 102.

Middle and Southern States and Lake Superior. Varies considerably in size and depth of coloring.

8. O. aquatilis, subovalis convexus, supra testaceo-piceus, medio obscuriore, subtus cum antennis pedibusque testaceus. Long. ·08.

San Jose, California, near water. More regularly oval than O. apicalis, and narrower than O. obtusus.

9. O. nitidus, rotundatus subovatus convexus, rufo-testaceus nitidus, elytris lævibus stria suturali (sicut in præcedentibus) impunctata. Long. ·04.

*Phalacrus nitidus* Mels. Proc. Acad. Nat. Sc. 2, 102.

Middle and Southern States, common.

10. O. pusillus, supra nigro-piceus, ad latera indeterminate rufo-piceus, oblongo-ovatus convexus, nitidus, elytris stria suturali antice punctata, punctisque seriebus duabus vel tribus utrinque abbreviatis parum distinctis, subtus cum antennis pedibusque testaceus pectore obscuriore. Long. ·04.

Middle and Southern States. Narrower than O. nitidus, and very easily distinguished by the two or three rows of punctures reaching near the base or tip.

### LITOCHRUS Er.

Palpi maxillares articulo ultimo cylindrico; tibiæ tenues, calcaribus apicalibus conspicuis; tarsi postici reliquis longiores, articulo primo elongato; femora haud ciliata.

L. pulchellus, oblongo-ovatus convexus, supra piceus nitidus, thoracis elytrorumque lateribus, macula obliqua antica alteraque posteriore maxima, ore antennis pedibus, corporeque subtus læte rufo-testaceis, elytris striis internis duabus tenuibus postice confluentibus. Long. ·06.

One specimen from Louisiana, liberally given me by Mr. Guex. A very beautiful little species. The elytra have only two very fine internal striæ, which unite about one fourth from the apex. The anterior spot is oblique, the posterior one is larger and rounded.

Litochrus brunnipennis, Mann. Bull. Mosc. 1852, 369; from Sitkha is according to a specimen sent me by Baron Chaudoir, a species of Agathidium.

Phalacrus pallipes, Say, Journ. Acad. Nat. Sc. 4, 90, from Kansas is unknown to me. It is a species of Olibrus, of the first division; it is described as not quite one tenth of an inch long, black, with the antennæ, feet and palpi testaceous.

## *Note on the genus* LITHODUS *Schonherr.*

By JOHN L. LE CONTE, M. D.

On examining a considerable number of specimens of this curious genus, procured by me several years ago, in the valley of the Platte River, it became evident at once that several species existed; from the close resemblance in color, form and sculpture, it seemed to be a matter of difficulty to separate them, and I proposed to leave them until time and inclination would induce some entomologist to labor upon a monograph of our native Curculionidæ; such time being, however, apparently remote, and desiring to make use of the names of these objects in other investigations, I have thought it desirable to make them known.

The species are all of a dull black color without lustre, and covered, when alive, with a crust of dirty brown matter; the surface is thinly clothed with very short yellowish bristles, which proceed from punctures; the punctures of the head are small, and the front is deeply sulcate: the rostrum is shorter than the head, flat, slightly narrowed in front, with the mandibles distinct. The thorax is longer than wide, uneven, very coarsely punctured, rounded on the sides and narrowed somewhat rapidly in front, (except in L. longior); the disc has four vague impressions, and sometimes a slight dorsal channel: the part near the apex is transversely elevated, but more so in some species than in others; the sides are transversely impressed near the apex.

The elytra are convex, connate, declivous and somewhat pointed behind, emarginate at base, with the humeral angles variously prolonged and embracing the base of the thorax: they have rows of large irregular foveæ, and the interstices are alternately more elevated: between the foveæ may be seen a few elevated punctures. The legs are feeble, the tarsi are not dilated, and the pectoral excavation does not reach the anterior coxæ.

1. L. humeralis, thorace fortius inæquali, ad apicem fortiter transversim elevato; elytris humeris valde productis, ad thoracis tertiam partem extendentibus, extrorsum curvatis. Long. ·33.

Germ. in Schônherr, Curc. 2, 420; 6, 2, 390.

*Brachycerus humeralis* Say, Journ. Acad. Nat. Sc. 5, 254.

*Thecesternus humeralis* Say, Curc. 8.

The humeral angles are much longer than in any of the others, and very distinctly bent outwards.

2. L. rectus, thorace fortius inæquali, ad apicem fortiter transversim elevato; elytris humeris valde productis, ad thoracis quartam partem extendentibus porrectis. Long. ·35.

One specimen. The thorax is as strongly impressed, and as much elevated at the base as in the preceding, but the humeral angles are less prolonged, and not curved outwards.

3. L. affinis, thorace minus inæquali, ad apicem modice transversim elevato, in latera minus profunde impresso; elytris humeris breviter recte productis. Long. ·35.

Differs from the next by the less strongly impressed and less deeply punctured thorax.

4. L. rudis, thorace valde cribroso, inæquali, ad apicem magis transversim elevato, in latera fortius impresso, elytris (sæpe tomento variegatis) humeris breviter recte productis. Long. ·31.—·35.

The thorax is more strongly and densely punctured than in the others, and the small elevations between the impressed foveæ of the elytra are usually more distinct.

5. L. erosus, thorace minus inæquali ad apicem paulo transversim elevato, in latera minus profunde impresso; elytris humeris breviter recte productis. Long. ·25.

Resembles L. **affinis**, but is only one third the size; the impressions of the elytra are also more irregularly distributed, and their sides are more rounded.

6. L. **longior**, magis elongatus, thorace inæquali, in latera fortius impresso elytris humeris paulo productis. Long. ·23.

Narrower than any of the others: thorax one third longer than wide, very gradually narrowed at base and tip, with the four dorsal impressions, and the lateral ones well marked. Elytra only moderately emarginate at base, with the humeri only slightly produced, and somewhat acute.

7. L. **morbillosus**, thorace inæquali, in latera minus profunde impresso, ad apicem transversim paulo elevato, elytris humeris parum productis. Long. ·25.—·3.

Resembles in form and characters L. **affinis** and L. **erosus**; it is intermediate in size, but the humeral angles are less prolonged, being, in fact, but slightly produced, and subacute.

These species occur under dried buffalo excrement in the desert region along the valleys of the Platte and Arkansas river: and are sometimes very abundant.

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## *Notice of three genera of* SCARABÆIDÆ *found in the United States.*

By JOHN L. LE CONTE, M. D

On account of the great resemblance in appearance between species of different genera among several of the tribes of Scarabæidæ, much confusion has resulted from the effort to place our species properly. This has perhaps been particularly the case with our smaller Dynastidæ. Eight species were placed by me in the genus Bothynus, and the species known to Burmeister were placed by that author in Podalgus and Heteronychus. A more careful examination convinced him that the reference to the former of these two genera was incorrect, and peculiarities in the stridulating organs required the construction of a new genus, Ligyrus *Burm.* (Lamell. 3, 542.) Although Heteronychus **relictus** is not mentioned, it also belongs to this genus, which comprises all the species from the United States known to Burmeister, except his Podalgus obesus (Bothynus castaneus *Mels.*)

The genus Ligyrus possesses a small elliptical plate of stridulating surface on the inner surface of the elytra, near the outer and posterior margin; the mandibles are strongly dentate externally, and the outer lobe of the maxillæ are toothed at the tip.

In the third volume of Prof. Lacordaire's admirable work on the genera of Coleoptera, these genera are carefully divided into groups, with the characters subordinated; and in one of the valuable notes he indicates the existence of a genus not recognized by Burmeister, and distinguished by having no organs of stridulation. No name was suggested, as the scope of Lacordaire's book permitted the introduction of no new materials; but, as I find myself under the necessity of referring to the species in some catalogues now preparing for publication, I have been obliged again to review those referred by me to Bothynus, and now present the results, with the addition of two other remarkable genera.

### LIGYRUS Burm.

As the inner surface of the elytra cannot always be conveniently examined, the following characters may be used to recognize the species of this genus. The mandibles are strongly toothed externally; the clypeus is only narrowly margined, furnished usually with two small upright teeth *at the apex;* the front is always transversely carinated, but the carina does not reach the sides of the head. The species may be divided into two groups, and the first may again be subdivided according as the clypeus has one or two apical teeth.

1. Thorax with an anterior fovea and acute tubercle; anterior tibiæ tridentate.

A. Clypeus bidentate at tip.

1. L. morio, oblongus, postice paulo latior, subtus ferrugineus, supra piceus vel ferrugineus, capite transversim æqualiter carinato, thorace parce punctato, lateribus subangulatis, elytris punctato-striatis, pygidio vix punctato; (maxillarum galea bidentata.) Long. ·53—·6.

*Bothynus morio* Lec. Journ. Acad. Nat. Sc. 2d ser. 1, 87.

Middle States, not rare. Differs from the next by the less deep punctures of the elytra, by the less dense and less coarse punctures of the thorax, and the more distinctly angulated sides of the latter, and by the pygidium being hardly punctured. The body is also more elongated and less dilated posteriorly.

2. L. gibbosus, oblongus, postice latior, subtus ferrugineus, supra piceus vel ferrugineus, capite transversim carinato, rugoso opaco, thorace parce fortius punctato, lateribus vix angulatis, elytris sæpissime fortius punctato-striatis, pygidio parce punctato; (maxillarum galea bidentata.) Long. ·48—·67.

*Scarabæus gibbosus* De Geer, 4, 322; tab. 19, fig. 7.

*Podalgus variolosus* Burm. Lamell. 3, 121.

*Ligyrus variolosus* Burm. Lamell. 3, 542.

Var. Elytrus minus profunde punctato-striatis, seriebus internis fere obliteratis.

*Bothynus obsoletus* Lec. Journ. Acad. Nat. Sc. 2d ser. 1, 87.

Our most common species; found from Massachusetts to Texas, and westwardly to Santa Fe, Colorado River and Oregon. The specimens from California, Oregon and Texas differ in having the sides of the thorax more regularly rounded, and in the Californian and Oregon specimens the inner striæ of the elytra are frequently almost obliterated, and the thorax scarcely foveate. From the locality there can be no doubt that this is De Geer's species, with the description of which it corresponds. The differences between this and the preceding have been already mentioned; from the next it differs (apart from the maxillæ) by the less deep punctures of the elytra, and by the rugosely punctured and almost opake clypeus.

3. L. juvencus, ferrugineus, supra et subtus concolor, postice dilatatus, capite transversim carinato, antice fere lævi, thorace grossius minus dense punctato, lateribus rotundatis, elytris fortiter punctato-striatis, pygidio parcius punctato; (maxillarum galea tridentata.) Long. ·53—·6.

? *Lygerus juvencus* Burm. Lamell. 3, 542.

? *Podalgus juvencus* Burm. ibid. 3, 121.

? *Geotrupes juvencus* Fabr. Ent. Syst. emend. 1, 32; Syst. El. 1, 20.

? *Scarabæus juvencus* Oliv. Ent. 3, 45, tab. 8, fig. 66, and tab. 16, fig. 143.

*Bothynus neglectus* Lec. Journ. Acad. Nat. Sc. 2d ser. 1, 87.

Georgia and South Carolina, common. The description of the clypeus "finely wrinkled, bidentate, the frontal suture elevated, abbreviated at the sides, slightly emarginate in the middle," given by Burmeister, leaves a doubt in my mind whether our species are really identical. The clypeus in mine is nearly smooth, and the frontal carina is in no respect different from that of the two preceding species. The references to Fabricius and Olivier are acknowledged by Burmeister to be doubtful, and it must be a matter of regret that the name was not allowed to become obsolete.

B. Clypeus at tip, with only a single elevated tooth.

4. L. ruginasus, ferrugineus, supra et subtus concolor, postice paulo latior capite rugose punctato, ad apicem acumine unico mucronato, transversim leviter carinato, thorace minus dense punctato, lateribus rotundatis fovea antica rugosa, elytris regulariter sat fortiter punctato-striatis, pygidio vix punctulato, (maxillarum galea tridentata.) Long. ·65.

One specimen found at Ringgold Barracks, Texas, by Lieut. Haldeman. In form and sculpture of the head and thorax this species exactly resembles L.

**gibbosus**, but the apical tooth of the clypeus is central, and therefore is not produced by wearing from a bidentate form; the transverse carina is less elevated. On the elytra the rows of punctures are somewhat more regular and smaller than in the specimens from the Atlantic States. The fovea behind the anterior acute tubercle of the thorax is rounded and densely rugous, while in all the species of division A it is polished. The maxillæ are distinctly visible in the specimen, and their galea is obviously tridentate at tip. The form of the stridulating organs and the sculpture of the propygidium is precisely as in the other species.

2. Thorax without anterior fovea and acute tubercle; anterior tibiæ sub-4-dentate.

5. L. **relictus**, nigro-piceus oblongus, capite leviter rugose punctato, clypeo antice bidentato, transversim carinato, carina medio interrupta, thorace parce punctato, lateribus rotundato, elytris linea suturali, alterisque 8 punctatis per paria approximatis, interstitiis alternis punctis plus minusve confusis notatis, pygidio parce punctato, ad basin subtiliter rugoso. Long. ·7—·9.

*Scarabœus relictus* Say, Journ. Acad. Nat. Sc. 5, 194.

*Heteronychus relictus* Burm. Lamell. 3, 92.

*Bothynus relictus* Lec. Journ. Acad. Nat. Sc. 2d ser. 1, 87.

Middle and Southern States, and Kansas as far as the Rocky Mountains; those from the latter locality are smaller than those found in Pennsylvania. Slight differences are observed in form in this species; females occur usually of a regular oblong form like the males, but occasionally they are quite considerably ovate.

In the other species of the genus I have been able to detect no sexual differences; here, however, the *inner* claw of the anterior tarsi of the male is thickened, dilated and suddenly curved.

L. **rugiceps**, oblongus, nigro-piceus, capite valde rugose punctato, clypeo antice bidentato, transversim carinato, carina medio interrupta, thorace parce punctato, lateribus rotundatis, elytris punctis densioribus sicut in priore insculptis. Long. ·55.

Two specimens without any abdomen, from Georgia. Very closely resembles the preceding in form and sculpture, but the size is so different that I cannot consider them as the same species. The only specific differences I can find, however, are the more strongly rugose head and more densely punctured elytra.

### APHONUS Lec.

This genus contains species agreeing with Ligyrus in every respect, except that the elytra on the inner surface are not furnished with stridulating plates, and the mandibles are not dentate externally; to avoid, however, the necessity of raising the elytra, recourse may be had to the structure of the head, which is narrowly margined, hardly transversely carinate just before the eyes, but at most furnished with a slight tubercle; the tip of the clypeus is varied in form; in the first division the tip itself is elevated, and immediately behind it is a sharp transverse elevated line, which is either uniform or tridentate. In the second division the tip is rounded, and the elevated line is strongly bidentate.

The species of the first division are of a very short ovate convex form; the mandibles are not prominent, the antennæ are 10-jointed, the 6th and 7th joints wider than the preceding ones; the one forming the second division is, however, only moderately dilated behind, the mandibles are more prominent, and the fifth and sixth joints of the antennæ are of the same size and closely united.

I. Thorax not foveate near the apex.

A. Pygidium moderately convex; last abdominal segment hardly finely margined.

1. A. **pyriformis**, breviter ovatus, obscure ferrugineus, capite confertim rugoso, vertice medio obsolete tuberculato, fronte ad apicem truncata, mox pone

apicem alte et paulo concave transversim reflexa, thorace lateribus rotundatis, punctato, parcius in disco pone medium, elytris sat grosse punctato-striatis, pygidio punctulato, parcius ad apicem. Long. ·67.

*Bothynus pyriformis* Lec. Journ. Acad. Nat. Sc. 2d ser. 1, 88.

Found near the forks of the Platte River. I observed in the collection of Capt. Wilkes' Exploring Expedition a specimen from Oregon, that I referred to this species, but as I have not now an opportunity of re-examining it, I cannot answer for the correctness of the reference. The sides of the head are extremely narrowly margined.

B. Pygidium very convex, last abdominal segment with a very strong line near the margin.

2. A. tridentatus, ovatus, piceus, subtus obscure ferrugineus, capite dense rugoso tenuiter marginato, fronte ad apicem emarginata et medio submucronata, mox pone apicem alte transversim reflexo tridentato, thorace lateribus rotundatis, punctato, parcius in disco pone medium, elytris grosse punctato-striatis, pygidio subtilissime punctulato, abdominis segmento ventrali ultimo linea marginali insculpto. Long. ·64.

*Scarabæus tridentatus* Say, Journ. Acad. Nat. Sc. 3, 209.

*Bothynus tridentatus* Lec. Journ. Acad. Nat. Sc. 2d ser. 1, 88.

One specimen found by me near Long's Peak; another from Missouri was given me by Prof. Agassiz. Both are females, and have the marginal line of the last abdominal segment sinuate at the middle.

3. A. frater, nigro-piceus, subtus nigro-ferrugineus, capite rugoso tenuiter marginato, in vertice obsolete elevato, clypeo ad apicem emarginato et mucronato, mox pone apicem linea transversa elevata tridentata, thorace lateribus rotundatis, punctato, parcius in disco pone medium, elytris rarius punctato-striatis, pygidio punctulato, versus apicem parce punctato, abdominis segmento ultimo ventrali linea marginali insculpto. Long. ·65.

One male found in New Jersey, given me by Mr. Guex. Differs from A. tridentatus only by the pygidium being nearly smooth at the tip, with a few distinct punctures, and by the punctures of the elytra being smaller and the striæ less numerous; this is produced by the absence of the rows between the alternate striæ; these intermediate rows are usually known by being slightly irregular. From the next species it differs by this character, as well as by the color and shape.

4. A. hydropicus, breviter ovatus, ferrugineus, capite rugoso fortius marginato in vertice obsolete elevato, clypeo ad apicem emarginato et mucronato, mox pone apicem linea transversa elevata tridentata, thorace lateribus rotundatis, punctato, parcius in disco pone medium, elytris fortiter punctato-striatis, pygidio parce subtiliter punctato, ad basin dense punctulato, abdominis segmento ultimo ventrali linea marginali insculpto. Long. ·57.

*Bothynus variolosus*|| Lec. Journ. Acad. Nat. Sc. 2d. ser. 1, 88.

Georgia, not rare. Much more dilated behind than the two preceding, with the punctures of the elytra large and the rows numerous. The pygidium of the female is much more convex than that of the male, and the submarginal line of the last ventral segment is sinuous in the middle, while in the male it is uniformly curved.

5. A. castaneus, breviter ovatus, ferrugineus, capite rugoso fortius marginato, vertice vix elevato, clypeo ad apicem emarginato et acute mucronato, mox pone apicem linea transversa elevata tridentata (dente medio minore,) thorace parcius punctato, elytris fortiter punctato-striatis, pygidio parce subtiliter punctato, ad basin punctulato, abdominis segmento ultimo ventrali linea submarginali inculpto. Long. ·45.

*Bothynus castaneus* Mels. Proc. Acad. Nat. Sc. 2, 138.

*Podalgus obesus* Burm. Lamell. 3, 119.

Middle and Southern States. Of the same form as the preceding, but only one-third the size, with the thorax less punctured, and the alternate striæ of the elytra arranged in pairs and composed of smaller punctures than in A. hydropicus. The sexual differences are as in H. hydropicus.

II. Thorax at the apex submucronate and slightly foveate.

6. A. clunalis, oblongus, convexus, piceo-castaneus, postice parum dilatatus, capite dense rugose punctato, tenuissime marginato, clypeo ad apicem rotundato submucronato, mox pone apicem linea valde elevata bidentata armato, sutura frontali distincta emarginata, medio tuberculo parvo notata, thorace lateribus valde rotundatis, subtilius punctato, disco versus basin sublævi, ante apicem fovea parva punctata notato, et in apicem brevissime mucronato, elytris punctato-striatis, punctis externis minoribus confusis, propygidio subtilius punctato, ad apicem lævi, pygidio lævigato modice convexo; abdominis segmentis singulo serie transversa grosse punctato, ultimo tenuiter marginato, (maxillarum galea bidentata.) Long. ·95.

One specimen found by Dr. Thos. H. Webb, of the Boundary Commission, and probably in the valley of the Gila. This species differs so much from the other species of the genus, that it can hardly be associated with them ; I have, however, failed to discover any better place for it, and do not desire at present to increase the number of genera. Although the propygidium is somewhat rough with punctures, I do not perceive any transverse rugæ, such as indicate the organs of stridulation in other genera. The hind tibiæ are thicker than usual, and the transverse crest at the middle is prolonged externally into an acute tooth ; it does not, however, agree with any of the genera of Pimelopides described by Lacordaire, and seems rather to belong to the division Pentodontides.

### Polymœchus Lec.

Clypeus trilobatus, lobis rotundatis, margine fortiter reflexo, ad apicem dentibus duobus parvis erectis armato, fronte utrinque transversim carinata, carinis margine adnexis ; oculi valde incisi ; mandibulæ extrorsum haud dentatæ, ad apicem acutæ et sursum productæ ; palpi articulo ultimo subcylindrico ; (maxillæ haud visæ ;) antennæ 10-articulatæ, clava triphylla, feminæ reliqua parte paulo, maris sesqui longiore ; in hoc sexu articulis funiculi externis crassioribus compressis. Prosternum pone coxas haud prominulum. Pedes breves, crassi, tibiæ femoribus haud longiores, anticæ ultra medium tridentatæ, dentibus approximatis ; intermediæ et posticæ ultra medium extrorsum emarginatæ et unicoronatæ ; ad apicem vix ciliatæ, angulo externo paulo producto ; tarsi tibiis haud longiores, articulis 1—4 æqualibus parce setosis, posteriores articulo 1mo haud elevato, 4to vero subtus longe acuminato ; 5to omnium longiore, unguiculis anticis sexus utriusque simplicibus, posterioribus feminæ simplicibus,' maris externis ad medium fortiter dentatis, dente ungue ipso vix breviore. Podex biarticulatus nudus.

A very remarkable genus of regularly oblong oval form, and not furnished with stridulating organs. Its characters approach those of Pachylus, from which, however, it is quite distinct. Professor Lacordaire, to whom I sent a specimen submitted it to a careful examination, and from his letter I translate the following extract, convinced that the opinion of my most learned friend, who has examined nearly all the genera of this family, will be of more service to the student than any thing I could say : " The Lamellicorn which you have sent is very remarkable, but there can be no doubt regarding its place in the entomological series. It is a genuine Dynastide, as is proved by the last abdominal stigmata diverging strongly, and by the form of the mentum, the mandibles and the clypeus ; but it is related to the Melolonthides by the form of the head, the eyes, the antennæ and the tarsi. Its facies is at once that of certain species of both groups. In short, it is a completely new form, intermediate between the two groups mentioned, and you can without fear found upon it a new genus, which ought, in my opinion, be placed among the Cyclocephalides, along side of Pachylus, which is also a very anomalous genus.

P. brevipes, nigro-piceus, vel obscure castaneus, oblongus, convexus, capite rugose punctato, clypeo ad apicem bidentato, fronte utrinque transversim carinata, margine reflexo, thorace lateribus rotundatis, confertim punctato, parce autem in disco pone medium, elytris punctato-striatis, punctis versus suturam confusis, podice punctato; abdomine coxisque posticis confertim aciculatis. Long. ·63—·7.

Pennsylvania, New York and Missouri; rare. Larger, more convex and more regularly oblong than Ligyrus variolosus. The outer striæ of punctures are almost entirely regular, while those next the suture are confused, especially towards the base. The eyes of the male are larger and more prominent than those of the female.

### PLEOCOMA Lec.

Clypeus (labrum?) prolongatus, antice angustatus acute rotundatus, pone apicem cornu transverso erecto furcato armatus; caput ante oculos acute extrorsum angulatum, vertice inter oculos cornu brevi erecto armatum; oculi magni vix emarginati. Antennæ 11-articulatæ, articulo 2ndo sequentibus crassiore; 3io paulo elongato, 4 et 5to æqualibus, 6to paulo dilatato; 7mo adhuc duplo latiore, 8—11 lamellatis, valde elongatis æqualibus. Mandibulæ, maxillæque haud visæ, palpi tenues. Thorax latus antrorsum angustatus parum convexus, disco antice declivi subdeplanato. Elytra parum convexa postice late rotundata. Prosternum haud prominulum Tibiæ anticæ elongatæ 7-dentatæ, dentibus supernis tribus minutis, 4 mediocri, 5—7 magnis; posteriores elongatæ parum incrassatæ, extrorsum ultra medium emarginatæ et ad medium unidentatæ, ad apicem oblique truncatæ, ciliatæ, angulo externo parum producto; tarsi (intermedii) tenues, tibia longiores, articulis 1—4 æqualibus, 5to præcedente duplo longiore, unguibus simplicibus, paranychia angusta bisetosa. Corpus subtus, os pedes elytraque ad marginem longe fulvo-pilosa.

A very remarkable insect, apparently belonging to the Dynastidæ, but differing from all the described genera of that tribe by the 11-jointed antennæ having a four-jointed club; the 7th joint might almost be considered as belonging to the club, but is only half the length of the four following. The very long hairs fringing the body give a strong resemblance in appearance to Syrichthus. The anterior tibiæ are somewhat as in Athyreus ferrugineus and other Geotrupides, but the teeth are more unequal; the anteocular lateral horns are seen also in that species; the eyes are very large, and contract the mouth so much beneath that the maxillæ and mandibles are invisible, or have been destroyed by insects: the thick hair also prevents me from seeing the form of the mentum. The form of the prosternum is the same as in Athyreus; the anterior femora are very densely clothed with hair on the anterior surface. The anterior and posterior tarsi and abdomen are unfortunately destroyed; the middle tarsi are exactly as in Athyreus. Doubt must therefore be entertained whether this genus should be placed with the Dynastidæ or Geotrupidæ; the form of the antennæ is equally repugnant to each, while the irregular puncturing of the elytra finds no parallel in the latter tribe.

I find it impossible to determine whether the projecting part of the head beyond the anterior horn is a clypeus or labrum; there is a slight appearance of a suture, but I am not certain of its existence; the part in question is longer than wide, gradually narrowed in front and acutely narrowed at tip.

P. fimbriata, latiuscula, ovalis parum convexa, nigra nitida supra glabra, capite inter cornua excavato lævi, occipite subtiliter rugose punctato, thorace latitudine fere triplo breviore antrorsum valde angustato, lateribus rotundatis parce punctulato, antice modice declivi, elytris stria suturali, alterisque 8 per paria approximatis parum distinctis punctatis, interstitiis sat dense punctatis, margine et subtus dense et longe fulvo-villosa. Long. 1·05.

A specimen found in California by Dr. A. H. Heermann was given by him to

Prof. Haldeman, and by the latter most liberally placed in my collection. It is, unfortunately, in a very bad state of preservation, but the remarkable characters will enable it to be readily identified when it again occurs. Mr. Motschulsky informed me, when in this country, that he had seen at the Imperial Museum of St. Petersburg, specimens of the same insect, which had been collected in California. He regarded it as allied to Ceratophyus *Fischer*, (a division of Geotrupes).

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## *Analytical table of the species of* CHLÆNIUS *found in the United States.*

By JOHN L. LE CONTE, M. D.

The close relationship existing between several of our species of Chlænius, and the fact that many species have been described under more than one name, induces me to believe that an analytical table by which the species, which are really distinct, may be readily recognized, will be of service to the students of the entomology of the United States. They may be thus arranged:

A. Caput punctatum; antennis articulo 3io longiore; pedes rufo-testacei.

*A.* Thorax convexus, grosse punctatus, subcordatus.

·45, supra cyaneus, elytris macula magna apicali flavo. 1. C. posticus *Lec.*
(·6, supra violaceus, elytris nigris, 2. C. viridifrons *Esch.*
·58, supra totus viridis 3. C. patruelis *Lec.*

*B.* Thorax planiusculus, æqualiter dense punctatus:

a. supra bicolores;

thorax postice subangustatus;

·6—·7, supra æneus, elytris atris, labro truncato 4. C. æstivus *Say.*
·3, supra æneus, elytris atris, labro emarginato 5. C. pusillus *Say.*

thorax postice non angustatus;

·5—·6, supra æneus, elytris atris, labro emarginato 6. C. emarginatus *Say.*
·4, supra viridis, elytris paulo obscurioribus, labro emarginato 7. C. amœnus *Dej.*

b. supra cyanei, concolores;

·75—·85, magnus, thorace lateribus sinuatis 8. C. rufilabris *Dej.*
·85, magnus, thorace lateribus non sinuatis 9. C. erythropus *Germ.*
·55,—·65, mediocris, elytris valde punctulatis 10. C. laticollis *Say.*

mediocres, elytris obsolete punctulatis;

·65, thorace lateribus subsinuatis 11. C. regularis *Lec.*
·6—·65, thorace lateribus haud sinuatis 12. C. rufipes *Dej.*

c. supra virides, concolores;

·35, ovalis, thorace antrorsum valde angustato, angulis posticis obtusis, 13. C. lithophilus *Say.*
·7, thorace antrorsum valde angustato, angulis posticis rectis 14. C. angustus *Newm.*
·55, thorace antrorsum subangustato, basi impresso 15. C. sericeus *Say.*
(·75, thorace postice haud angustato, ano rufo 16. C. smaragdinus *Chaud.*

*C.* Thorax planiusculus inæqualiter punctatus, subcordatus;

·6—·7, viridis, thorace subtiliter versus basin dense punctulato 17. C. prasinus *Dej.*
·6, cyaneus, thorace vage minus subtiliter punctato 18. C. cumatilis *Lec.*

B. Caput læve, vel subtilissime punctulatum.

*D.* Thorax inæqualiter punctatus, cordatus; antennis articulo 3io longiore.

·50, cyaneus, thorace depresso 19. C. leucoscelis *Chevr.*

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|---|---|
| ·6, obscure viridis, thorace depresso, elytris subtilius punctulatis | 20. C. chlorophanus *Dej.* |
| (·66, "niger, elytris nigro-virescentibus" | 21. C. cordicollis *Kirby.* |
| ·53, læte viridis, thorace convexiore, elytris valde punctatis | 22. C. solitarius *Say.* |
| *E.* Antennæ articulo 3io haud longiore: (thorax præcipue æqualiter punctatus.) | |
| a. supra bicolores, thorax æqualiter punctatus; | |
| ·47, thorace æneo obsoletius punctato, elytris atris | 23. C. nemoralis *Say.* |
| thorace fortius punctato ; | |
| ·4—47, viridis, elytris vix obscurioribus, fortius punctulatis, striis vix punctatis | 24. C. pensylvanicus *Say.* |
| ·42—·5, cupreo-æneus, thorace antrorsum fortius angustato, elytris atro-cyaneis, obsolete punctulatis, striis punctatis | 25. C. tricolor *Dej.* |
| ·45, viridis, thorace antrorsum parum angustato, elytris atro-cyaneis, obsolete punctulatis, striis fortiter punctatis | 26. C. brevilabris *Lec.* |
| ·45, viridis, elytris paulo obscurioribus, subtiliter punctulatis, tenuiter striatis | 27. C. Nebraskensis *Lec.* |
| ·44—·54, thorace vage punctato, viridis, elytris obscurioribus | 28. C. glaucus *Lec.* |
| b. supra concolores, thorace ante basin latiore; | |
| ·46, cyaneus, thorace æqualiter obsolete punctato, postice haud angustato, | 29. C. vafer *Lec.* Proc. 6, 66 |
| ·43, æneo-ater, thorace inæqualiter punctato, transverso, postice angustato, elytris fortius punctulatis, (pedibus vel rufis vel nigris) | 30. C. asperulus *Men.* |
| ·37, æneo-ater, cyanescens thorace inæqualiter fere obsolete punctato, haud transverso, postice angustato, elytris minus conspicue punctulatis (pedibus rufis) | 31. C. obsoletus *Lec.* |
| ·45, viridis, thorace inæqualiter fortius punctato, lateribus rotundato, | 32. C. circumcinctus *Say.* |
| ·5, totus æneo-ater, thorace quadrato, rugose, ad basin utrinque densius punctato, elytris fortius punctulatis | 33. C. harpalinus *Esch.* |
| ·55—·65, ovalis, obscure æneus, thorace antrorsum angustato, dense subtiliter punctato, capite viridi | 34. C. impunctifrons *Say.* |
| ·5, ovalis totus niger, thorace antrorsum angustato, grosse inæqualiter punctato, profunde impresso, elytris valde punctulatis | 35. C. niger *Randall.* |
| c. pedes et corpus concoloria, thorace ad basin latiore; | |
| ·37, fere ellipticus, supra cyanescens, thorace inæqualiter punctato, elytris subtiliter striatis densissime punctulatis | 36. C. purpuricollis *Rand.* |
| fere elliptici fusco-ænei, thorace æqualiter fortius punctato, callo elongato utrinque discoidali notato, elytrorum striis antice grosse punctatis. | |
| ·55, thorace lateribus parum rotundatis | 37. C. tomentosus *Dej.* |
| ·67, thorace lateribus antice valde rotundatis | 38. C. amplus *Lec.* |

*Doubtful species.*

C. impunctifrons || Kirby, Fauna Bor. Am. 4, 21. Perhaps C. brevilabris, but the description is very indefinite.

C. quadricollis Kirby, Fauna Bor. Am. 4, 22. Probably C. pensylvanicus.

C. fulgiceps Newm. Ent. Mag. 5, 490. Probably C. pensylvanicus.

C. oxygonus Chaud. and C. longicollis Chaud. Bull. Mosc. 1843. Probably varieties of C. tricolor or C. brevilabris.

Dinodes rotundicollis Dej. Probably not North American.

The species in parentheses are unknown to me: the characters above given of them are taken from the original descriptions.

*Notes and Synonyms.*

1. C. posticus *Lec.* Mels. Cat. 13. is *C. apicalis*|| Lec. Ann. Lyc. of Nat. Hist. 5, 179.

4. C. aestivus *Say*, Trans. Am. Phil. Soc. 2, 62; *C. cobaltinus* Dej. Sp. Gen. 2, 331; var. *C. congener* Lec. Proc. Acad. 2, 51; Ann. Lyc. 4, 435.

5. C. pusillus *Say*, Trans. Am. Phil. Soc. 2, 63; *C. elegantulus* Dej. Sp. Gen. 2, 367.

9. C. erythropus Germ. Sp. Nov. 11; *C. rufilabris* Dej. Sp. Gen. 2, 329.

12. C. rufipes seems to vary much in the form of the thorax; the variety or race with the thorax short, more rounded on the sides, and the posterior angles obtuse is *C. brevicollis* Lec. Ann. Lyc. 4, 432. Many entomologists are disposed to receive it as a different species, but similar variations seem to occur in C. sericeus.

13. C. lithophilus *Say*, Trans. Am. Phil. Soc. 2, 62; *C. viridanus* Dej. Sp. Gen. 5, 660.

14. C. augustus *Newm.* Ent. Mag. 5, 490; *C. Lecontei* Hald. Proc. Acad. 1. 304.

15. C. sericeus *Say*, Trans. Am. Phil. Soc. 2, 61: Dej. Sp. Gen. 2, 347. *Carabus sericeus* Forster, Cent. Ins. 58, varies somewhat in the form of the thorax; a specimen in which the sides are more rounded than usual, and the anterior angles are considerably deflexed, is *C. perviridis* Lec. Ann. Lyc. 4, 434. This species is found from Maine to Oregon, and as far south as Texas.

19. C. leucoscelis *Chevr.* Col. Mex. 1st cent.; *C. monachus* Lec. Ann. Lyc. 5, 180.

23. C. nemoralis *Say*, Trans. Am. Phil. Soc. 2, 65. It is doubtful whether the species described under this name by Kirby, (Fauna Bor. Am. 22) is really this; the expression 'thorax densely punctured' seems to indicate that C. tricolor is meant.

24. C. pensylvanicus *Say*, Trans. Am. Phil. Soc. 2, 66. *C. pubescens* Harris, New England Farmer, 1828; *C. vicinus* Dej. Sp. Gen. 5, 659. This species varies slightly in the form of the thorax, but may be easily distinguished from the allied species, by the rough and distinctly punctured interstices of the elytra, while the striæ are only faintly punctured. C. fulgiceps *Newm.* and C. quadricollis *Kirby*, are perhaps to be added to the synonyms of this, but the descriptions are very unsatisfactory. Mannerheim states that this species is found in California, but I have not seen any specimens from the regions west of the Rocky Mountains.

25. C. tricolor *Dej.* Sp. Gen. 2. 334. Specimens of this species were found by me at Tucson, in Northern Sonora, and at San Diego, California; they differ from those found on the Atlantic slope of the continent, by the thorax being shorter and more rounded on the sides.

26. C. brevilabris *Lec.* Ann. Lyc. Soc. 4, 437. Differs from C. tricolor

by the thorax being broader and less narrowed anteriorly, and by the striæ of the elytra being very strongly punctured; *C. consimilis* Lec. appears to be merely a variety in which the head and thorax are slightly coppery, and the latter is not narrowed toward the base.

27. C. Nebraskensis, subtus niger, supra viridi-æneus, pubescens, capite subtilissime punctulato, thorace latitudine breviore, haud convexo, lateribus rotundatis utrinque paulo angustato, sat dense punctato, ad basin utrinque longe impresso, angulis posticis obtusis; elytris obscurioribus striis tenuibus antice subtilius punctatis, interstitiis planissimis subtiliter punctulatis, pedibus palpisque rufis, antennis piceis articulis tribus baseos rufis, 3io sequente haud longiore. Long. ·45.

Yellowstone River, Dr. Hayden: Santa Fe, Mr. R. C. Kern. Differs from the neighboring species by the more finely striate elytra; in a dorsal view in fact the outer striæ appear almost obliterated.

28. C. glaucus, subtus niger, supra obscure viridi-æneus, pubescens, capite subtilissime punctulato, thorace latitudine paulo breviore, subquadrato, utrinque subangustato, lateribus modice rotundatis, vagius et profunde punctato, ad basin utrinque longe impresso, angulis posticis subrectis, elytris obscuris, vel atrocyaneis, striis punctatis, interstitiis fere planis, subtiliter punctulatis, pedibus palpisque rufis, antennis piceis, articulis tribus baseos rufis, 3io haud longiore. Long. ·44—·54.

Colorado river, near the junction of the Gila. Larger than the neighboring species, and known by the more quadrate thorax, being less densely punctured.

30. C. asperulus *Ménétriés*, Bull. Soc. Imp. St. Petersb. 2, 55. Baron Chaudoir informs me that C. obscurus *Lec.* Ann. Lyc. 5, 179, belongs to this species. The color varies, so that the head sometimes becomes greenish bronzed, as described by Ménétriés. The antennæ are sometimes entirely black, and sometimes the first joint is reddish brown. The feet vary in color from rufous to black. The thorax is slightly narrowed, both at the apex and base, but cannot be called cordate. The thorax is described by Ménétriés "cordato, profunde sed vage punctato," and I should not venture to refer his to my species, were it not for the direct comparison made by my learned and accurate correspondent, Baron Chaudoir. This discrepancy in the description leads me to believe that C. variabilipes *Esch.* must also be referred here: it being premised that not only does the color of the legs and antennæ vary, but even the punctures of the thorax, are sometimes very strong, (though never dense, as described by Eschscholtz), and the fine punctures of the interstices of the elytra are at times less distinct.

The description of Eschscholtz (Zool. Alas 5, 27), is as follows:—

"Niger pubescens, capite lævi, thorace subviolaceo, punctatissimo, basi coarctato; angulis productis; elytris obsolete punctulatis, striis profunde punctatis, antennarum basi pedibusque aut rufo-testaceis aut nigris. Long. 5½ lin.

"San Francisco. Head black, almost imperceptibly rugous. Thorax wider than long, somewhat rounded on the sides, narrowed near the rectangular prominent posterior angles; disc dark blue, thickly covered with large but not deep punctures, hairy with brown pubescence, with two longitudinal impressions at the base. Scutellum black, smooth, shining. Elytra clothed with brown hair, opake black, very finely and not obviously punctured; humeri not prominent; striæ fine, and strongly punctured on the anterior half. Antennæ and legs of one specimen black, palpi with the last joint red, cylindrical: in the other specimen, a female, the two basal joints of the antennæ, the whole of the palpi, and the feet are red: the third joint of the antennæ is of the same length as the following."

The description of Ménétriés reads thus:—

"C. asperulus, obscure æneus, rufo-pubescens; capite lævi, viridi-cupreo, thorace cordato, profunde sed vage punctato; elytris striatis, striis forte punctatis, interstitiis subtilissime asperatis; antennis pedibusque nitide nigris, palpis rufis."

31. C. obsoletus, *Lec.* Ann. Lyc. 5, 180, is certainly closely allied to the preceding, but the thorax is hardly wider than long, and is more narrowed behind ; the feet, palpi and antennæ are rufous, the latter being darker externally as is usual.

32. C. circumcinctus *Say,* Trans. Am. Phil. Soc. 4, 418 ; *C. virens* Chaud. Bull. Mosc. 1843.

34. C. impunctifrons *Say,* Trans. Am. Phil. Soc. 2, 64 ; *C. emarginatus* Kirby, Fauna Bor. Am. 4, 23.

35. C. niger *Randall,* Bost. Journ. Nat. Hist. 2, 34 ; *C. exaratus* Ferté, Ann. Ent. Soc. Fr. 2nd ser. 9, 249.

37. C. tomentosus Dej. Sp. Gen. 2, 357 ; *Epomis tomentosus* Say, Trans. Am. Phil. Soc. 2, 60 ; *Amara luctuosa* Germ. Sp. Nov. 10. On this species M. La Ferté has founded a genus Eurydactylus, which differs from Chlænius, only in the dilated joints of the anterior tarsi of the male being broader. I do not find in this character an exact agreement between our different species, and, although I have adopted the genus in my memoir in the Trans. Am. Phil. Soc. (10, 390,) I now unite in the opinion of Lacordaire, Gen. Col. (1, 224) that it is entirely unnecessary. Say mentions a green variety from Missouri.

38. C. amplus. I have separated under this name a species having the color and sculpture of C. tomentosus, but very different in the form of the thorax, which instead of being gradually rounded on the sides from the base to the apex, has the sides almost parallel near the base, and very much rounded before the middle. It is found in Georgia, and I have examined two specimens of which one is in the collection of Dr. Harris.

## *Synopsis of Species of* Chrysomela *and allied Genera inhabiting the United States.*

By W. Frederick Rogers.

The Genera in the United States may be thus classified :—

| | |
|---|---|
| Ungues fissi ; femora postica incrassata ; | Blepharida. |
| Ungues integri, vel vix dentati ; femora haud incrassata ; | |
| Palpi articulo ultimo breviore truncato | Doryphora. |
| | (Polygramma, Labidomera). |
| Palpi articulo ultimo haud breviore ; | |
| Tarsi articulo 2ndo haud angustiore | Timarcha. |
| Tarsi articulo 2ndo minore | Chrysomela. |

### BLEPHARIDA.

Maxillary palpi with the last joint cylindrical and obtusely pointed at the extremity. Posterior femora moderately thickened. Middle and posterior tibiæ with an obtuse angle on the exterior margin one-third from the tip. Ungues bifid. Anterior coxæ moderately distant. Prosternum flat. Mesosternum hardly protuberant. Middle coxæ widely separated.

B. rhois. Oval, convex, ferruginous; head and thorax yellow; elytra with eleven rows of large punctures, irregularly mottled sometimes vittate with yellow and ferruginous; margin always broadly yellow; antennæ black, base piceous. Length ·25—·30.

*Chrysomela rhois* Forst. Cent. Ins. 1, 21. Hübn. Naturf. 24, St. 40. Oliv. Enc. Meth. 5, 720.

*Altica virginica* Frolich, Naturf. 26, 129, 54.

*Haltica rhois* Illig. Mag. 6, 161.

*Chrysomela stolida* Fabr. Ent. Syst. 1, 318. Syst. El. 1, 435. Oliv. Enc. Meth. 5, 700.

*Haltica stolida* Illig. Mag. 6, 161.

*Chrysomela meticulosa* Oliv. Ins. 91, 531, tab. 6, fig. 91.

*Locality.*—Middle States, Southern States, Nebraska and Upper Mississippi.

There is considerable variation in the marking; one specimen from the Southern States was observed having the disc of the elytra irregularly ferruginous with a broad yellow margin. Another specimen from the South has the elytra ferruginous and the spaces between the suture and 1st, 2 to 3, 5 to 6 and 8 to 9th striæ yellow.

These differences are sufficient to account for the supposed species above quoted.

### DORYPHORA Fabr.

Ungues entire, posterior femora not thickened. Maxillary palpi thickened, penultimate joint conical, last joint cylindrical, truncate shorter than the preceding; tibiæ rounded at the extremity and excavated externally; tarsi with second joint small. Coxæ widely separated.

The genus may be divided into three divisions:—

1. Tropical species, in which the mesosternum is produced into a horn.
2. Those in which the mesosternum is slightly excavated, and the feet without spines. Sp. 1—4.
3. Those in which the mesosternum is slightly protuberant, and the anterior femora are armed with spines, at least in the male. Sp. 5.

1. D. **juncta.** Oval, convex, brownish yellow, head and thorax spotted with black; elytra pale yellow, each with 9 rows of punctures and four black vittæ; scutellum black; suture and space between the two outer vittæ and epipleuræ brownish yellow; lateral margin blackish, beneath spotted with black; femora with a small black spot.

Length ·35—·40.

*Chrysomela juncta* Germ. Sp. Nov. 590.

*Locality.*—Georgia.

The two outer vittæ are usually connected at the base and tip, but occasionally are completely confluent.

2. D. **10-lineata.** Oval, convex, brownish yellow, head and thorax spotted with black, scutellum brownish yellow, margined with black, elytra each with five black lines; the interior line is confluent with the suture behind, beneath spotted with black; knees and tarsi black.

Length ·35.

Say, J. Acad. 3, 453.

*Locality.*—Nebraska and Texas.

3. D. **rubiginosa.** Oval, convex, yellowish brown, scutellum black; elytra finely not densely punctured; antennæ and legs black.

Length ·40.

One specimen collected by J. D. Clark, Esq., of the Mexican Boundary Commission at San Antonio, Texas.

Body above and below yellowish brown; head with a few punctures, a finely impressed vertical line, and a few small impressions between the eyes; thorax with a few scattered punctures, larger and more obvious at the sides, elytra finely punctured; the punctures in some places forming irregular rows.

4. D. **Haldemani.** Subovate, convex, purplish black; elytra dark metallic green, sparsely punctured.

Length ·35.

One specimen collected by Lt. H. Haldeman, Fredericksburg, Texas.

Body subovate, narrowed in front very convex, almost gibbose; head and thorax sparsely punctured, purplish black, scutellum black, elytra sparsely punctured, the punctures becoming smaller towards the tip, and occasionally arranged in rows; antennæ, legs and under surface purplish black.

5. D. **trimaculata.** Oval, rounded convex, bluish green; elytra orange with blue band and large posterior spot; feet purplish.

Length ·30—·40.

Say, J. Acad. 3, 455. Harris, Ins. 2nd edit. 117.

*Chrysomela trimaculata* Linn. Syst. Nat. 2, 592. Fabr. Ent. Syst. 312. Fabr. El. 1, 424. Oliv. Ins. 91, 515, pl. 3, fig. 29. Coquet. Ill. 3, 123.

*Chrysomela clivicollis* Kirby, Faun. Bor. Amer. 213.

*Locality.*—Middle States, Southern States and Nebraska.

Antennæ and palpi black; elytra punctured in double lines, which become confused near the tip; a dilated black band extending in breadth from near the base to the middle, not attaining the lateral edge, and often interrupted in the middle of each elytron; under surface black, feet purplish.

### TIMARCHA Redt.

Palpi slightly thickened with the last joint, oval, truncate and a little longer than the preceding; tarsi with the second joint not smaller than the first or third; ungues simple approximate; coxæ of anterior feet moderately, of the posterior widely separated; tibiæ rounded at the extremity, not sulcate. Body oblong, very convex, black scabrous, with confluent impressed punctures, which are coarsest upon the elytra; the latter are united.

T. intricata. Head irregularly and strongly punctured, thorax with large scattered punctures, the interstices tolerably densely punctured, transverse, more than twice as long as broad; apex broadly emarginate, base subsinuate, basal angles rectangular; elytra with large confluent punctures, the interstices with fine scattered punctures; under surface coarsely, feet finely punctured. Tab. 1, fig. 1.

Length ·40.

Hald. Proc. Acad. 6, 363.

*T. intertexta* Hald. Ibid.

*Locality.*—Oregon and northern California, Dr. Townsend and Mr. Child.

T. intertexta I regard as a variety of intricata, with the elytra a little more rugose.

### CHYSOMELA Linn.

Palpi with the last joint not longer than the preceding; tarsi with second joint smaller than the first and third; ungues simple; coxæ of anterior feet moderately or slightly, those of the posterior widely separated. The body varies in form from rounded to oval, and even to elongate; it is usually winged, but apterous in only one American species; the palpi vary in form, having the last joint in many thick and dilated, and in others slender; thorax always broader than long, sometimes equally convex, sometimes with the lateral margin broadly thickened. The sculpture of the elytra varies; some are very finely and confusedly punctured with labyrinthine rows of larger punctures limiting spots of different colors, while in others the punctures are arranged in nine regular striæ with a short one at the scutellum. The mesosternum is never protuberant, the femora are never toothed. The tibiæ vary in form; they are sometimes rounded at the tip and not sulcate; sometimes dilated into an angle; and sometimes sulcate on the outer margin.

The species found in this country may be divided into the following groups:—

I. Palpi dilated;

1. Sides of the thorax not thickened.
    * Tibiæ rounded at the apex, elytra irregularly punctured, or with sinuous striæ.
Elytra with labyrinthine spots. A
Elytra striped. B.
    ** Tibiæ with an external tooth near the apex; elytra with regular striæ of punctures. C.
2. Sides of the thorax thickened. D.

II. Palpi slender.

1. Body elongate.
    * Elytra irregularly punctured.
        Sides of the thorax thickened. E.
        Sides of the thorax not thickened. F.
    ** Elytra with regular striæ of punctures. G.
2. Body rounded
    *** Elytra with regular striæ of punctures. H.
    **** Elytra irregularly punctured.
        Tibiæ excavated externally and dilated at tip. I.
        Tibiæ excavated externally, hardly dilated at tip. K.

Group K, does not appear in the subsequent pages, as I have seen no American specimens of C. adonidis, the species on which it is founded; although Kirby states that specimens of it were obtained in high northern latitudes.

A.

1. C. scalaris. Oval, greenish blue, elytra punctate, yellowish white spotted with blue, suture with a broad metallic black stripe branched in three or four places, humerus with a large lunate spot; under surface bronzed black, antennæ and legs ferruginous. Tab. 1, fig. 2.

Length ·32—·40.

Lec. Ann. Lyc. 1, 173. Harr. Ins. 117.

*C. philadelphica*‡ Kirby, Faun. Bor. Am. 210.

*Locality.*—Middle States, Lake Superior and Nebraska.

Oval, rather narrower than usual, greenish blue, sometimes dark bronze; thorax with scattered punctures at the sides, elytra punctate, yellowish white, and very brilliant silvery when living; suture with a broad metallic stripe generally black, sometimes bronze and dark blue. This insect is closely allied to C. philadelphica of Linn., the difference consists in the suture being marked with a broad black stripe, with which the spots are connected so as to form branches; in C. philadelphica the suture is black, straight and narrow, separated from a narrow subsutural black vitta by a narrow yellow line. There is considerable variety in the color and size of the spots of these insects.

2. C. serpentina. Oval, greenish blue, elytra pale gold, with the suture and several large sinuous dark blue spots more or less confluent; margin black, antennæ black, red towards the base; legs dark red, under surface bluish black. Tab. 1, fig. 3.

Length. ·42.

Five specimens collected by J. D. Clark, Esq., at San Antonio, Texas.

Body oval, moderately convex; head with a triangular impression between the eyes, thorax coarsely punctured at the sides, scutellum bluish green, elytra pale gold, suture and confluent stripe blue, the latter not reaching the base, with about ten dark blue spots, wings brilliant red; under surface very dark blue, almost black; antennæ hairy at the tip.

I have adopted the name used in Dr. Le Conte's Cabinet. In dried specimens the golden tint of the elytra fades, and the color becomes yellowish white.

3. C. dislocata. Oval, bluish green, elytra pale ferruginous, with subsutural vitta and several sinuous black spots more or less confluent, antennæ blackish, red at the base, legs and under surface black. Tab. 1, fig. 4.

Length. ·35.

Three specimens collected by J. D. Clark, Esq., San Antonio, Texas.

Body oval, moderately convex, head moderately punctured; thorax strongly punctured at the sides.

4. C. tortuosa. Oval, ferruginous; elytra yellow with several black spots, suture and a subsutural vittæ dark ferruginous, the latter confluent near the tip, antennæ, legs and under surface ferruginous. Tab. 1, fig. 5.

Length. ·25.

Two specimens collected by J. D. Clark, Esq., San Antonio, Texas.

Head and thorax ferruginous slightly punctured, scutellum ferruginous, elytra with from five to nine black spots, sometimes confluent, legs slightly punctured.

5. C. **philadelphica**. Oval, greenish black, elytra pale yellow, with a longitudinal stripe near the suture, and a number of dark green spots; palpi, antennæ and legs rufous, under surface dark green. Tab. 1, fig. 6.

Length. ·27—·34.

Linn. Syst. Nat. 2, 592, 44. De Geer. Ins. 5, 353, 6, t. 16, f. 13. Fabr. Syst. El. 1, 444, 135. Fabr. Syst. Ent. 1, 392. Oliv. Ent. 5, 91, 525, 33, t. 2, f. 22.

*C. decipiens* Web. Obs. Ent. 1, 52, 1?

*Locality.*—Middle, Southern and Western States.

Body oval, with scattered punctures, head and thorax sparsely punctured; scutellum dark green, elytra with three larger dark spots near the suture; the suture is generally black, and dilated towards the thorax, but in one specimen from Missouri Territory, this is not the case, and in it the suture is pale yellow, and does not become broader in front.

C. **spiræ æ**. Green, elytra pale yellow tinged with red, with green spots and a common sutural line, trifed at base, antennæ and legs rufous; under surface dark green.

Length. ·25.

Say, J. Acad. 5, 297.

*C. confinis* Kirby, Fauna Bor. Amer. 211.

*Locality.*—Lake Superior.

Body oval, head and thorax dark bronzed green, elytra pale yellow, sometimes rufous, each with about seventeen small green dots, and a common sutural line which sends off a lateral short branch on each side near the base. In one specimen the spots and sutural line are black.

7. C. **Bigsbyana**. Oval, green, anterior margin and sides of prothorax yellow, elytra yellow, with a sutural stripe, antennæ and legs rufous, under surface dark green.

Length. ·25—·35.

Kirby, Fauna Bor. Amer. 212.

*Locality.*—Middle and Western States, also two specimens from Steilacoom, Puget sound, W. T., collected by Geo. Gibbs, Esq.

8. C. **multipunctata**. Oval, ferruginous, thorax yellow, with ferruginous spots arranged in a circle, elytra yellow, with numerous green spots; antennæ, legs and under surface ferruginous. Tab. 1, fig. 7.

Length. ·24—·35.

Say, J. Acad. 3, 451. Kirby, Fauna Bor. Amer. 211.

*Locality.*—Missouri Territory.

Head ferruginous, thorax yellow, with a ferruginous, irregular arcuated line and basal edge, including an obsolete spot, elytra with a sutural stripe and numerous irregular green spots, and abbreviated lines. In one specimen the suture has a common ferruginous fillet.

### B.

9. C. **exclamationis**. Oval, ferruginous, thorax with a yellow margin, elytra pale yellow, with four black striæ, the third abbreviated, the fourth interrupted.

Length. ·30.

Fabr. El. 1, 435. Oliv. Ins. 91, 530. tab. 6, fig. 81.

*Locality.*—Southern States and Kansas.

Head ferruginous, anterior margin of the prothorax yellow, elytra pale yellow, with the suture and four striæ ferruginous; the first and second not reaching the margin, the third confluent with the fourth at the edge of the elytra; legs and under surface ferruginous.

10. C. **casta**. Oval, dark ferruginous; thorax strongly but sparsely punctured; elytra pale yellow, sparsely punctured; suture and three lines marked

with fine punctures; legs and under surface ferruginous; epipleuræ brown. Tab. 1, fig. 8.

*Locality.*—Kansas and Illinois; specimens from the latter locality were collected by Mr. R. Kennicott.

This insect is allied to C. pulchra, but in that species the outer vittæ are usually entirely confluent into one broad stripe. In C. casta these lines are narrow and the subsutural one is confluent only behind the middle.

11. C. coniuncta. Oval, convex, ferruginous; thorax yellow, sparsely punctured with a large ferruginous spot covering the base; elytra pale yellow, with the suture and subsutural vitta confluent; the other two connected behind and a short one at the humerus, legs and under surface ferruginous. Tab. 1, fig. 9.

Length. ·23.

*Locality.*—Kansas.

Related to C. exclamtionis, but is smaller, with head and thorax more shining and less punctured; with the conjoined vittæ more abbreviated behind there is no lateral dot at the middle, and the epipleuræ are not ferruginous, except at the extreme margin.

12. C. disrupta. Round and convex, blackish; thorax coarsely punctured, elytra pale yellow, punctured; the suture, sub-sutural vitta and three other discoidal narrow ones anteriorly abbreviated, with several sub-marginal bronzed dots; legs and under surface blackish. Tab. 1, fig. 10.

Length. ·21—·26.

*Locality.*—Louisiana and Kansas.

This insect is of the same form as the previous ones, but may be distinguished by the interruption of the interior dorsal vittæ; the middle one nearly unites posteriorly with the inner one, but is a little shorter than it; the outer posterior dots are directly in continuation of the external abbreviated vitta: epipleuræ pale.

13. C. hybrida. Ferruginous, elytra pale yellow, with a wide sutural and discoidal ferruginous band, the band nearly divided into two, of which the inner one is narrower. Tab. 1, fig. 11.

Length. ·35.

Say, J. Acad. 3, 449.

*Locality.*—Southern States and Nebraska.

Body oval, thorax irregularly punctured and with larger confluent punctures on the sides; scutellum impunctured, rounded at the tip; antennæ, legs and under surface ferruginous.

There is great variety in the marking, a specimen from Nebraska has the band divided into three, the first joined to the second at the base, the middle one sinuous and joined to the outer one at the tip, the outer one very faint, at the base.

14. C. incisa. Oval, rounded, bronzed, ferruginous; thorax with coarse punctures; elytra pale yellow, with a broad blackish brown sutural vitta abbreviated at the base, a broad stripe narrowed at the humerus and not reaching the base, and a small dot at the base, and another at the tip; epipleuræ dark. Tab. 1, fig. 12.

Length. ·24.

*Locality.*—One specimen from Kansas.

This insect has the same form and size as C. pulchra, the punctures of the dark vitta and those of the external rows are, however, more distinct, and the form of the vittæ different. The sutural one is not prolonged at the base, but truncate anteriorly at the scutellum, which, as usual, is dark colored; at about two-thirds the length it is suddenly slightly dilated nearly to the apex. The outer vitta is a very broad spot extending three-fourths the length of the elytra; narrowed before and behind, convex on its inner, but moderately emarginate on its outer surface about the middle.

15. C. pulchra. Rounded, black bronzed; elytra pale yellow; suture and a broad dorsal vitta dark bronzed.

Length. ·24—·26.

Fabr. El. 1, 425. Oliv. Enc. Méth. 5, 693. Fabr. Ent. Syst. 1, 313, 27. Coqueb. Ill. Ins, 3, 123. Sch. Syn. Ins. 2, 240.

*Locality.*—Middle and Southern States.

Body oval, rounded; thorax coarsely punctured; scutellum black, which gives the sutural vitta the appearance of extending to the prothorax; elytra pale yellow, with punctures on the suture and vittæ which do not reach the apex or base, outer margin of the vitta slightly and obtusely sinuous; the vitta is sometimes partially divided by a yellow line, and may sometimes form two vittæ; in another specimen the sutural and discoidal vittæ are confluent; antennæ, legs and under surface brownish black.

16. C. similis. Oval, dark bronzed; elytra pale yellow; suture and a broad dorsal vitta dark bronzed. Tab. 1. fig. 13.

Length. ·26.

*Locality.*—Middle and Southern States.

This species differs from the preceding in the shape; it is quite oval, whereas, C. pulchra is round; the emargination of the outer margin near the middle is more angular and sudden.

17. C. præcelsis. Oval, convex, ferruginous; thorax with a yellow margin; elytra pale yellow, with fine punctures; legs, thorax and under surface ferruginous. Tab. 1, fig. 14.

Length. ·31.

*Locality.*—Kansas river.

Thorax with the disc coarsely punctured, with a narrow yellow margin at the side impunctured; elytra with fine punctures on the suture and dorsal vittæ, with a broad sutural vitta suddenly narrowed at the base, and a broad bronze brown dorsal vitta, narrowed at the apex and base.

18. C. elegans. Oval, metallic black; thorax yellow, with a black mark at the base; elytra pale yellow, with a black suture and dorsal vitta.

Length. ·20—·25.

Oliv. 91, 532, tab. 6, fig. 92.

*Locality.*—Middle and Southern States and Lake Superior.

Head black; antennæ black, with the second and third joints slightly ferruginous; thorax yellow, slightly punctured, with two confluent spots on each side placed obliquely, the anterior one being nearer the middle; and with a black dorsal line; the spots have the appearance of the letter W inverted; elytra pale yellow, slightly punctured with a black sutural and dorsal vitta regularly punctured; legs and under surface black.

### C.

19. C. rufipes. Oblong, oval, ferruginous; head black, with mouth and antennæ red; thorax coarsely punctured with two large triangular spots at the base; elytra ferruginous, with ten black spots, legs red, under surface black.

Length. ·25.

De Geer. Ins. 5, 295, tab. 8, fig. 5. Suffr. Linn. Ent. vol. 5, 211.

*Phytodecta rufipes* Kirby. Fauna Bor. Amer. 213.

*Locality.*—Lake Superior.

There is great variety in the marking of the thorax and elytra, the markings in some specimens are very faint, and in others wanting. I have not been able to make any comparison between this and the European species, and I give it as identical on the authority of Kirby.

20. C. arctica. Oblong, oval, elongate, ferruginous; head black; thorax with two basal black spots usually confluent, coarsely punctured; scutellum black; elytra ferruginous, with ten black spots; legs black, with the tibiæ and tarsi red.

Length. ·26.

*Gonioctena arctica* Mann. Bull. Mosc. 1853.
*Gonioctena affinis*‡ Mann. Bull. Mosc. 1852, 2, 369.
*Locality.*—Russian America.

According to Mannerheim's description, this species varies much in color; he also states that it is nearly allied to the European C. nivosa.

D.

21. C. subsulcata. Oblong, oval, apterous, dark blackish green; thorax with the margin much thickened, not reaching the apex internally, slightly punctured; elytra connate, very convex, rounded at the sides, sulcate and punctured in regular rows; antennæ, legs and under surface very dark bluish green.
Length. ·32.
Mann. Bull. Mosc. 1853.
*Locality.*—Russian America.

22. C. cribraria. Oblong, oval, bronzed black; thorax much thickened at the sides, reaching the apex, with a few large marginal punctures near the impression; elytra very dark, bronzed black, thickly and irregularly punctured; antennæ, legs and under surface black.
Length. ·37.
*Locality.*—Southern States.

23. C. inornata. Oblong oval, bronzed; thorax with margin thickened and a few coarse punctures at the side; elytra bronzed black; legs and under surface dark blue.
Length. ·25.
*Locality.*—Western States.

This insect is closely allied to C. cribraria, but differs in the color of the thorax and elytra; there are also more punctures on the thorax, and the lateral impression is less deep than in C. cribraria.

24. C. subopaca. Oblong oval, black, bronze, tinged with green; thorax with thickened margin, with a few punctures at the sides; elytra finely punctured, with the punctures forming indistinct rows; antennæ dark blue, with the four last joints hairy, legs and under surface black, bronzed.
Length. ·25.
*Locality.*—Middle States.

Thorax less punctured; elytra more finely punctured and less lustrous than in C. inornata; the punctures are arranged in rows.

25. C. auripennis. Oval, oblong, violaceous; thorax with the margin thickened and slightly distant punctures; scutellum violaceous; elytra golden cupreous brilliant, exterior edge green, punctured, punctures placed in somewhat regular rows; antennæ, legs and under surface violaceous.
Length. ·32—·46.
Say, J. Acad. 3, 452.
*Locality.*—Western States, Nebraska, New Mexico and Texas.

These insects vary greatly in color; two specimens from New Mexico are entirely violaceous, and in one from Texas the elytra are brilliant green.

26. C. vidua. Oblong, oval, black, slightly bronzed; thorax with the margin thickened, with coarse punctures; elytra black, slightly bronze, with the punctures in somewhat regular rows; antennæ, legs and under surface black.
Length. ·26.
*Locality.*—Oregon, Col. McCall.

27. C. flavomarginata. Oblong, black; thorax with lateral margin thickened and punctured at the sides; elytra black, with regularly-disposed punctures, and smaller irregularly disposed punctures; exterior and tip yellowish, legs and under surface black.
Length. ·22—·29.
Say, J. Acad. 3, 452.
*Locality.*—Kansas.

### E.

28. C. interupta. Oblong, elongate, black; thorax black, with a yellow margin thickened; elytra pale yellow, with six spots on each more or less confluent; legs bluish black, with tibiæ ferruginous.

Length. ·25—·35.

Fabr. El. 1, 438. Oliv. Ins. 91, 558, tab. 8, fig. 119.

*Locality.*—Middle States, Southern States, Lake Superior, Nebraska and Oregon.

This species varies much in color, the specimens I have examined may be classed under the following varieties, though intermediate forms occur:—

1. The two anterior spots confluent; two middle spots confluent; and the two posterior spots confluent, forming a very broad band; legs bluish black, with tibiæ ferruginous; under surface bluish black.

2. The two anterior spots confluent, having the shape of a horse shoe; the two middle spots separate and the two posterior confluent, but much more narrow than in 1.

3. With none of the spots confluent; legs bluish black; tibiæ pale yellow, under surface black, with the four last segments of the abdomen slightly marked with yellow.

4. In which all the spots have disappeared, with the exception of the two middle ones; legs blue, black, with the tibia ferruginous, under surface black.

5. The two anterior spots confluent; the middle separate, and the posterior confluent; legs and under surface ferruginous, except the sides of the pectus, which are black.

6. None of the spots confluent; legs ferruginous; under surface of the thorax black.

29. C. scripta. Oblong, elongate, black; thorax black, with a yellow margin thickened; elytra yellow, coarsely and sparsely punctured, with seven elongate spots on each elytron, two at the apex, slightly elongate, three at the middle very elongate; and two at the base, the one nearest the suture slightly elongate, the other broad and very elongate.

Length. ·27—·35.

Fabr. El. 1, 438. Oliv. 5, 559. Oliv. Enc. Mèth. 5, 119?

*Locality.*—Middle States, Southern States, Nebraska and Lake Superior.

In two specimens the thorax is dark red, with a yellow margin, and the under surface black with the legs ferruginous.

30. C. confluens. Oblong oval, black, head and thorax black, thorax with a wide yellow margin, elytra brownish black, finely and sparsely punctured, with four very faint oblong ferruginous spots on each elytron, antennæ, legs and under surface black.

Length ·28.

*Locality.*—Oregon, one specimen.

Closely allied to C. obsoleta of Say, but differs from it in the form of the body, being wider in proportion, also in having the elytra more finely punctured.

31. C. obsoleta. Oblong oval, head and thorax tinged with green, margin of the latter yellowish, thickened, with a black insulated point; elytra brownish black irregularly punctured, margin, tip and obsolete lines before and behind the middle yellowish, antennæ legs and under surface black.

Length ·33.

*Helodes obsoleta* Say, J. Acad. 3, 435.

*Locality.*—Western States.

Differs from C. confluens in the form of the body, being longer and more narrow, also in having the elytra more coarsely and densely punctured.

### F.

32. C. californica. Oblong oval, dark green, thorax sparsely punctured,

elytra dark green, coarsely punctured, antennæ and legs black, under surface blackish green.

Length ·18.

This insect was sent by Col. Motschulsky, under the name of Plagiodera californica, as coming from California, but I have been unable to find any description of it.

G.

33. C. trivittata. Oblong, blue-black, head entirely blue-black, with an impressed frontal line divaricated before; thorax sparsely punctured, lateral margins yellowish, this color being contracted in the middle on the inner side; elytra with punctured striæ, sutural margin yellow; vitta on the middle not reaching the tip, and exterior edge blue-black; legs black, tibiæ ferruginous, abdomen with the caudal segment margined behind with dull yellow.

Length ·15.

*Helodes trivittata* Say, J. Acad. 5, 289.

*Locality.*—Middle States, Lake Superior.

34. C. vitellinæ. Oblong slightly oval, coppery violaceous, antennæ with first and second joint rufous; thorax finely and sparsely punctured, elytra coppery violaceous, punctured in rows with the interstices indistinctly punctured; under surface bronze black, legs black with the first joint of tarsi rufous.

Length ·16—·18.

*Phytodecta vitellinœ* Kirby, Faun. Bor. Amer. 216.

*Locality.*—Middle States, Western States and Lake Superior.

One specimen from Lake Superior had the elytra black.

H.

35. C. viride. Rounded, dark green, head with an impressed frontal line, thorax very finely and sparsely punctured; scutellum blackish, elytra very finely punctured in striæ with the lines remote, antennæ, legs and under surface blackish.

Length ·12—·16.

*Gastrophysa viride* Mels. Pro. Acad. 3, 175.

*Locality.*—Middle States.

I.

36. C. dissimilis. Oblong oval, metallic blue or green, head impressed between the antennæ, antennæ black, thorax regularly convex, lateral edges regularly curved, scutellum impunctured, elytra densely punctured, legs and under surface black, posterior angles of thorax very obtuse and rounded.

Length ·24.

Say, J. Acad. 3, 451.

*Locality.*—Nebraska.

Varies in its colors. It is sometimes of a very dark purple, and sometimes of a bright green, more or less tinged with violaceous, particularly about the suture.

37. C. caesia. Oblong oval, brilliant metallic green, head and thorax densely punctured with the posterior angles of the thorax obtuse, elytra metallic green, finely punctured, legs and under surface blackish green.

Length ·21—·23.

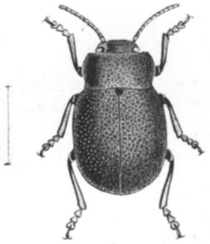
*Locality.*—California, at San Francisco.

The thorax is very perceptibly narrower than the elytra; and the body is longer and more convex than C. cyanea.

One specimen is blackish.

38. C. cyanea. Oblong oval, purplish, head and thorax densely punctured, elytra purplish, densely punctured, antennæ legs and under surface purplish black.

*Gastrophysa cyanea* Mels. Pr. Acad. 3, 175.



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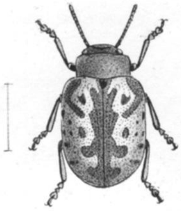

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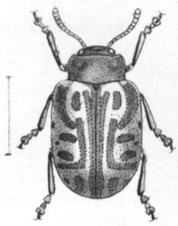

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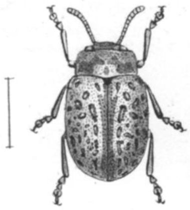

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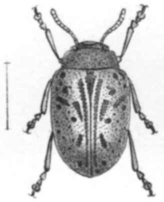

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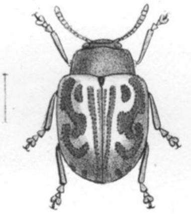

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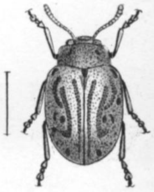

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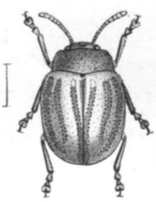

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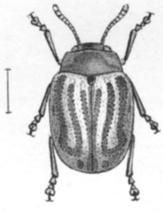

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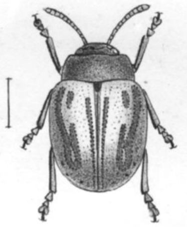

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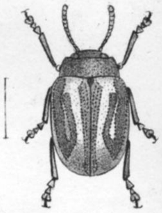

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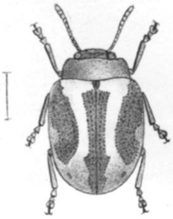

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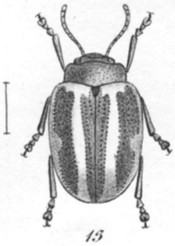

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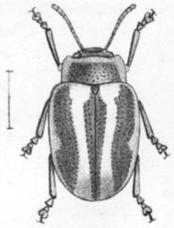

14

On Stone by Wm E. Hitchcock

Lith. & Printed by J. T. Bowen, Phil.

Length ·20.
*Locality.*—Middle and Southern States.

This insect is very closely allied to C. caesia, but differs in having the thorax wider, and the body longer and more narrow in proportion to its size.

39. C. polygoni. Oblong oval, brilliant metallic blue, head blue-black punctured, antennæ black, basal joint rufous beneath and at tip, thorax rufous sparsely and finely punctured, elytra brilliant metallic blue densely punctured, under surface blackish blue, legs rufous, tarsi black, anus rufous.

Length ·18.
Linn. Fn. Suec. 520; Syst. Nat. 2, 589, 24. Harris, Insects, 118, (2d edition.)
*C. cœruleipennis* Say, J. Acad. 5, 296.
*Phædon polygoni* Kirby, Fn. Bor. Am. 216.
*Locality.*—Southern and Middle States.

40. C. formosa. Oblong oval, convex, above golden green, strongly punctured, thorax with the basal angles obtuse, scutellum purple, elytra strongly punctured, suture purplish, exterior edge blue, antennæ and palpi black, tibiæ black, under surface violaceous.

Length ·18.
Say, J. Acad. 3, 451.
*Locality.*—Kansas and Santa Fé.

*List of Species unknown to me.*

C. viminalis Linné. Mann. Bull. Mosc. 1853. Russian America.
C. lapponica Linné. Mann. Bull. Mosc. 1853. Russian America.
Phratora interstitialis Mann. Bull. Mosc. 1853.
C. basilaris Say, J. Acad. 3, 451.
C. adonidis Fabr. El. 1. 431. Phædon adonidis Kirby, F. B. A. 216.
Gastrophysa ænea Mels. Pr. Acad. 3, 175.
Gastrophysa raphani Fabr. Kirby, F. B. A. 216.

All the specimens, I have described in the preceding pages, are in the Cabinet of Dr. J. L. Le Conte, to whom I must return my sincere thanks for his valuable assistance and the kind loan of books and specimens.

## *Notes on North American Birds in the Collection of the Academy of Natural Sciences, Philadelphia, and National Museum, Washington.*

By John Cassin.

1. Buteo montanus, Nuttall, Man. Orn. U. S. i, p. 112, (1840).
"Buteo Swainsonii, Bonap.," Cassin, B. of Cal. and Tex. i, p. 98.
"Falco buteo, Linn." Aud. Orn. Biog. iv, p. 508. Aud. B. of Am. pl. 372, Oct. ed. i, pl. 6.

On examination of not less than twenty specimens of this bird from various localities in the Western countries of North America, I have found the characters constantly present which distinguish it from *Buteo borealis*, as pointed out in my Birds of California and Texas, p. 98. The voice of this species is represented by several of the late naturalists who have visited California, as quite peculiar, and I am assured by my friend Dr. Thos. M. Brewer, of Boston, that the egg is entirely different from that of *B. borealis*. Though nearly related to that species, it is very probably entitled to be regarded as distinct, for which purpose Mr. Nuttall's name as above given is proper.

This bird appears to be of common occurrence in California, being brought in nearly every collection from that country, and it is also in Dr. Suckley's collection from Washington Territory. The specimen figured by Mr. Audubon as above, and which was brought by Dr. Townsend from the Rocky Mountains, is in the collection of the Philadelphia Academy. It is the same specimen described by Mr. Nuttall, and named as above.

2. SPIZELLA PALLIDA, (Swainson).

Emberiza pallida, Swainson, Faun. Bor. Am., ii, p. 251 (1831).

Emberiza Shattuckii, Audubon, B. of Am., oct. ed. vii, p. 347 (1844). Aud. B. of Am. oct. ed. vii, pl. 493.

The bird described and figured by Mr. Audubon as above, is the *Emberiza pallida*, Swainson, as any one may readily determime by examining and comparing the descriptions as above cited, with or without specimens.

This species is easily recognized by its wide stripe of ashy white from the base of the bill over the eye, two longitudinal stripes on the head of brownish black, and with an intermediate or middle stripe on the top of the head ashy white. Ears and cheeks behind and below the eye pale brown, with a line of black on its lower edge, and another line of black from the corner of the lower mandible. Upper parts of body pale ashy brown, every feather on the back and wing coverts with a black longitudinal stripe; tail brown. Under parts white, tinged with ashy and pale brown on the sides and flanks. Bill and feet yellowish. Total length 5½ inches, wing 2½, tail 2½ inches.

*Hab.* Western North America, California. Spec. in Mus. Acad. Philada., and Nat. Mus. Washington.

3. SPIZELLA BREWERI, nobis.

"Emberiza pallida, Swains." Audubon, Orn. Biog. v, p. 66. Aud. B. of Am. pl. 398. oct. ed. iii, pl. 161.

This species has the head above and other upper parts uniform pale ashy brown, every feather having a narrow brownish black line, a short and obscure stripe of ashy white over the eye. No stripes on the head, as in the preceding. Under parts ashy white. Bill and feet yellowish. Total length 5 inches, wing 2½, tail 2½ inches.

*Hab.* Western North America, California, New Mexico. Spec. in Mus. Acad. Philada., and Nat. Mus. Washington.

Easily distinguished from the preceding by the absence of the stripes on the head, so strongly characterizing that species and smaller size. It is apparently a much more abundant species, being brought in nearly all collections from California and New Mexico.

I have much pleasure in embracing the present opportunity to dedicate a bird of the United States to my esteemed friend Thomas M. Brewer, M. D., of Boston, one who to the highest abilities and social qualities adds an ardor in devotion to Ornithological science rarely paralleled.

4. TOTANUS BREVIPES, Vieill. Nouv. Dict. vi, p. 410 (1816).

Totanus fuliginosus, Gould, Voy. Beagle, Birds p. 130 (1841).

Scolopax undulata, Forster, Desc. An. p. 173 (1844).

Totanus polynesiæ, Peale, Voy. Vincennes and Peacock, Birds p. 237 (1848).

Totanus pulverulentus, Müller, Verh. p. 153 (1844)?

Totanus oceanicus, Lesson, Comp. aux Œuv. de Buffon. p. 244 (1847).

Tringa glareola. Pallas, Zoog. Ross. As. ii, p. 194 (1831).

Pallas Zoog. Rosso-As. Birds, pl. 60. Temm. and Schl. Fauna Japon. Birds, pl. 65?

About the size of or rather larger than *T. flavipes*. Wing long, pointed, first primary longest, secondaries short, truncate, emarginate, tertiaries long, tarsi and toes rather short, tibia feathered about two-thirds of its length.

*Adult.*—Entire upper parts, neck, breast and sides dark lead colored, uniform and without white marks; throat, middle of abdomen, ventral region and under tail coverts white. Under wing coverts white, spotted and barred with dark lead color. A stripe of white from the base of the bill over the eye, lores brownish black, eye enclosed in a narrow circle of white. Quills dark brown, shaft of the first primary white on its upper surface; shafts of the other primaries reddish brown on their upper surface, and of all on their under surfaces, white. Tail lead colored, uniform with the upper parts of the body, shafts of tail feathers lead colored above, white beneath. Bill dark, feet greenish.

*Younger.*—Upper parts as above, entire under parts transversely barred with dark ashy brown and white, the former predominating on the sides and flanks. Throat and middle of the abdomen white.

*Dimensions.*—Total length (of skin) about 10½ inches, wing 6½ inches, tail 3¼ inches.

*Hab.* Islands in the Pacific Ocean, Washington Territory, (Dr. J. G. Cooper) Spec. in Nat. Mus. Washington, and Mus. Acad. Philada.

For the first time within the limits of the United States, this extensively diffused species has been found in Washington Territory, the extreme north west portion of this Republic, by J. G. Cooper, M. D., naturalist attached to the party which surveyed the most northern proposed route for a rail-road to the Pacific Ocean, and commanded by Hon. I. I. Stevens. It is a small species uniformly colored above, and not difficult to distinguish from any other of its genus yet discovered in the United States.

This species possesses an extensive range of locality, probably including the greater part of the entire western coast of North and South America, the Sandwich and Feejee Islands, and is very nearly allied to, if not identical with the Japanese species, figured as above in Fauna Japonica. It has, moreover, quite a redundancy of names, a portion of which we cite above. Pallas gives this species as an inhabitant of Kamtschatka and the Russian American islands.

5. ANSER HYPERBOREUS, Pallas, Spicilegia Zoologica, i, pt. vi, p. 25, (1769.)
Anas nivalis, Forster, Phil. Trans. London, lxii, p. 413, (1772.)
Wilson, Am. Orn. viii, pl. 68, fig. 5. Aud. B. of Am. pl. 381, fig. 1, oct. ed. vi, pl. 381, fig. 1.

This species is either liable to great variation in size and color of plumage, or three distinct birds have been confounded under one name. My present information inclines me to the opinion that the latter is the truth; after having collected numerous specimens now in the Museum of the Academy, and rather carefully noted the observations of northern voyagers and of naturalists attached to Arctic Expeditions.

Two distinct sizes appear to be constant in the same sexes of specimens that are perfectly white, with the black tips of the primaries and the ferruginous markings on the head and face in both, and these I regard at present as distinct species. The larger is the bird described by Pallas and Forster and by all American authors as the Snow Goose, and is much the more frequent on the Atlantic coast of North America. It is figured by the authors above cited and by others, and specimens are frequently brought to the markets of the cities, though some winters have passed in Philadelphia in which I have not noticed it. Specimens of adults and young are in the Museum of this Academy, the young being distinguished by the prevalence of a cinereous color on the upper parts of the head, neck and body. Sexes alike, female slightly smaller.

*Dimensions.*—Male. Total length (of skin) about 31 inches, wing 18½, tail 6½, bill from the tip to frontal feathers along the culmen 2½, to gape 2¾, tarsus 3¼ inches.

6. ANSER ALBATUS, nobis.

*Form.*—Smaller than the preceding, bill shorter, bare space at the base of the upper mandible not extending so far into the feathers (on the sides of the bill in front.) Wing long, second quill longest, tail short but comparatively rather longer than in the preceding, which is also the case with the tarsus.

*Dimensions.*—Male. Total length (of skin) about 25 inches, wing 15¾, tail 5¾, bill measured along the culmen from tip to frontal feathers 2, to gape 2, tarsus 3 inches. Sexes alike, female slightly smaller.

*Colors.*—Adult. Entire plumage white, except primaries, which are pale cinereous at base and black in the terminating two-thirds of their length. Front and cheeks spotted with ferruginous, bill and feet red.

*Hab.*—Western and Northern America, Oregon, rare on the Atlantic.

A single specimen from Oregon is in the collection of the Exploring Expedition in the Vincennes and Peacock, and four specimens, which occurred in pairs, have come under my notice in the market at Philadelphia in the course of twenty years. These five specimens are all that I have seen of this species, and it is very probably of rare occurrence on the coast of the Atlantic in this latitude, much more so than the preceding. The four specimens alluded to, which are a pair of adults and a pair of young, are now in the collection of the Philadelphia Academy.

The third species, confounded by authors with the preceding, is:

7. ANSER CŒRULESCENS (Linn.)

Anas cœrulescens, Linn. Syst. Nat. i. p. 198, (1766.)

Edwards, Birds, iii. pl. 152. Wilson, Am. Orn. viii. pl. 69, fig. 5. Aud. B. of Am. pl. 381, fig. 2, oct. ed. vi. pl. 381, fig. 2.

This bird is figured and described by both Wilson and Audubon, as the young of *Anser hyperboreus*, but neither of them appear to me to have done so on any sufficient information, as may, I think, readily be inferred from their articles on that species. That it is not the young of either of the preceding species is my conclusion, being, as I believe, acquainted with the young of both.

The figure given by Edwards as above, represents, apparently, the young of this species, and those of Wilson and Audubon a more mature stage of plumage, if not adult. This bird was known to the earlier naturalists, having been named by Linnæus as above, in 1766, and before him by Brisson in 1760. Both, however, probably described on the faith of Edwards' figure, which was published in 1748. Pennant apparently does not, but gives a sufficient description of this species under the name of "Blue winged Goose" in Arctic Zoology, ii, p. 269, (1792.)

If this bird is the young of *Anser hyporboreus*, which I deem very improbable, its specific name as above is the proper designation of the species, having priority over Pallas' *Anser hyperboreus*, or Forster's *Anas nivalis* (Phil. Trans. London, lxii. p. 413, 1772,) which are synonymes. It is of rare occurrence on the coast of the Atlantic, in the latitude of New Jersey, though stated to be abundant in the Arctic regions. Specimens in the Museum of the Philadelphia Academy.

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## *A Synopsis of Entozoa and some of their Ecto-congeners observed by the Author.*

By JOSEPH LEIDY, M.D.

### PROTHELMINTHA.

1. BODO RANARUM Ehrenberg.

Abundant in the intestines of different species of frogs and toads.

2. BODO HELICIS Diesing.

*Cryptobia helicis* Leidy, Proc. Acad. Nat. Sci., iii, 101.
*Cryptoicus helicis* Leidy, Journ. Acad. Nat. Sci., 2d ser., i, 67.
*Bodo helicis* Diesing. Leidy, Pr. A. N. S., v, 284.

3. BODO COLUBRORUM Hammerschmidt.

In the cloaca of *Tropidonotus sirtalis.*

4. BODO JULIDIS Leidy.

Pr. A. N. S., v, 100; Trans. Am. Phil. Soc., 2d ser., x, 244.

5. BODO MUSCARUM Leidy.

Frequent in the intestine of the house fly, *Musca domestica*, in immense quantity.

6. BODO MELOLONTHÆ Leidy. Body spherical; diameter .00449 to .0112 mm. Tail simple, about the length of the diameter of the body.

Found in the intestine of *Melolontha quercina* and *M. brunnea.*

7. BURSARIA INTESTINALIS Ehrenb.

In the intestine of *Rana pipiens.*

8. LEUCOPHRYS STRYATIS Dujardin.

*Leucophrys.* Leidy, Journ. A. N. S., 2d ser., ii, 49.
In the liquids of the body of *Enchytraeus.*

9. Leucophrys clavata Leidy.
Journ. A. N. S., 2d ser., ii, 50; iii, 144.
Found in the *Lumbriculus limosus*, and *L. tenuis*.

10. Leucophrys cochleariformis Leidy.
Journ. A. N. S., 2d ser., iii, 144.
Found in the intestine of *Lumbriculus tenuis*.

11. Leucophrys socialis Leidy. Cordate, ovate, oval, pyriform, or globular, contractile, active, with one or many internal vacuolæ; striated, ciliated. Length .036 to .045 mm., breadth .03 mm.

Found very frequently and abundantly within the stomach of the remarkable bryozoon *Urnatella gracilis*. (Pr. A. N. S., vii, 191.)

12. Nyctotherus velox Leidy.
Pr. A. N. S., v, 233; Trans. Am. Phil. Soc., 2d ser., x, 244.
From the large intestine of *Julus marginatus*.

13. Nyctotherus ovalis Leidy.
Pr. A. N. S., v, 100; Trans. Am. Phil. Soc., 2d ser., x, 244.
From the intestine of the common cockroach, *Blatta orientalis*.

14. Albertia? pellucidus Leidy.
*Anelcodiscus pellucidus* Leidy, Pr. A. N. S., v, 287.

## MYZELMINTHA.

15. ? Monostomum incommodum Leidy. Body compressed, above convex, below concave, sides parallel, anteriorly convex, posteriorly angularly convex. Head continuous with the body, obliquely truncated. Mouth round, surrounded with a wide circular lip which is emarginate below. Male generative aperture? communicating with a hemispherical cavity (acetabulum?) one fourth the length of the body from the head. Length 9 lines, breadth 1½ lines.

Five specimens were obtained from the fauces of the *Alligator mississipiensis*, in Florida, by Prof. J. W. Bailey, of West Point. Is it probably a species of *Distomum*, with the ventral acetabulum emersed within the body?

16. Monostomum ornatum Leidy. Body slightly compressed ovoidal, anteriorly broad; yellow variegated with brownish red. Mouth infero-terminal, acetabuliform, transversely oval. Penis conical, protruding a short distance below the mouth. Female aperture a short distance below the penis. Length 1 to 1½ lines, breadth ½ to ¾ of a line, thickness ¼ to ½ a line.

A dozen specimens were obtained from the abdominal cavity of *Rana pipiens*.

17. Monostomum renicapite Leidy. Body depressed, lateral margins parallel, anteriorly and posteriorly rounded, above convex, below concave. Head formed by a transverse, reniform callosity. Mouth transversely crescentic, surrounded with a double lip. Penis a small conical tubercle. Length from ½ an inch to 1 inch, breadth 1¾ lines.

Numerous specimens were obtained by Prof. Agassiz from the intestine of *Sphargus coriacea*.

18. ? Monostomum molle Leidy. Body depressed, elongated elliptical, posteriorly convex. Head? mouth? Length 9 lines, breadth 2 lines.

I have found two specimens, of what I suspect to be a species of *Monostomum* in the lungs of two individuals of *Sternotherus odoratus* The species is so soft that in the removal of the specimens I mutilated both, and since then I have been unable to find others.

19. Distomum lanceolatum Mehlis.
Reported to exist in the sheep, *Capra aries;* the ox, *Bos taurus;* and the hog, *Sus scrofa*. Stated to be frequent in the sheep, in several of the Western States.

20. Distomum hepaticum.
In the hepatic ducts of the *Cervus virginianus*. Though I have never seen

specimens from the source given, yet I think there is little doubt of its existence, from the circumstance that sportsmen and hunters have frequently informed me, they had seen leeches in the liver of the deer, which they supposed the animal had swallowed in drinking. Also reported to exist in the ox, *Bos taurus*, and in the horse, *Equus caballus*.

21. DISTOMUM VARIABILE Leidy. *Var. a.* Body white, variegated with black in the course of the oviduct, clavate, posteriorly obtuse, minutely echinated. Neck long, narrow, cylindrical, echinated. Oral and ventral acetabula nearly equal; the latter one prominent, situated at the base of the neck. Length to 6 lines; breadth of body ½ a line.

*Var. b.* Body flattened ovate, continuous with the head, anteriorly narrowed, posteriorly obtuse, color and echination as in the preceding variety. Length 2½ lines, breadth 2 lines.

Variety *a* is found attached to the sides of the cavity of the lungs of *Tropidonotus sipedon*, singly or in groups up to six, with the head and neck buried in tumors, as in the case of the attachment of *Echinorhynchi.* Variety *b* is found detached in the mucus of the lungs and trachea. Common;—obtained in December, when the water snakes were hybernating.

22. DISTOMUM HORRIDUM Leidy.
*Distoma horridum* Leidy, Journ. A. N. S., 2d ser., i, 303.
From the excretory duct of the kidneys of the *Boa constrictor.*

23. DISTOMUM VARIEGATUM Rud.
Leidy, Pr. A. N. S., v, 207.
From the lungs of *Rana pipiens.*

24. DISTOMUM RETUSUM Dug.
Leidy, Pr. A. N. S., v, 207.
From the intestine of *Rana halecina.*

25. DISTOMUM CYGNOIDES Zeder.
Leidy, Pr. A. N. S., v, 207.
From the urinary bladder of *Rana pipiens*, *R. palustris*, *R. halecina; Salamandra maculata*, *S. rubra*, *S. salmonea.*

26. DISTOMUM LONGUM Leidy.
Pr. A. N. S., v, 206.
From the mouth of *Esox estor.*

27. DISTOMUM TERRETICOLLE Rud.
Leidy, Pr. A. N. S., v, 206.
From the stomach of *Esox reticulatus.*

28. DISTOMUM INCIVILE Leidy. Body flat, elongated elliptical; echinated between the oral and ventral acetabula, which are equal, and the latter one is hemispherical and sessile. Length 2½ to 3 lines, breadth 3-5ths to 4-5ths of a line.

Obtained from the intestine of *Leiostomus obliquus.*

29. DISTOMUM CLAVATUM ? Rud. Body pyriform, transversely annulated, plicated. Neck curved conical, 3 lines long. Ventral acetabulum oblique, prominent, at the base of the neck, 3 lines in diameter, with a circular aperture much larger than the mouth. Length 1 inch, breadth 4 lines.

One specimen in the collection of the Academy. Locality unknown.

30. DISTOMUM VAGANS Leidy.
*Distoma helicis* Leidy, Pr. A. N. S., iii, 220.
*Distomum pericardium* Creplin, Arch. f. Naturg. xv, 78.
*Distoma vagans* Leidy, Journ. A. N. S., 2d ser., i, 304.
*Cercariaeum helicis alternatæ* Diesing, Rev. d. Cerc. 24.
*Cercariaeum vagans* Diesing, Rev. d. Cerc. 24.
Found in *Helix alternata* and in *H. albolabris.*

## CLINOSTOMUM Leidy.

Head shorter than, and separated from the body by a lateral constriction opposite the ventral acetabulum, compressed semi-oval. Body compressed oval. Mouth anterior. Ventral acetabulum, large, hemispherical, immersed within the commencement of the body, and having a truncated conical aperture with the apex posterior. A terminal pore to the body.

31. Clinostomum gracile Leidy. Head semi-ovoid, anteriorly obliquely truncated. Mouth transversely oval, with a prominent margin and a second border, which is slightly emarginate below. Body compressed oblong, oval, convex above, concave below, obtuse posteriorly, acetabulum larger, immersed between the head and body. Length to 3 lines, breadth to 1 line.

Found in the intestine of *Esox* , and within cysts in the gills, fins, and muscles of *Pomotis vulgaris.*

32. Clinostomum dubium Leidy. Head compressed oval, convex anteriorly; mouth minute, not bordered. Body compressed oblong oval. Ventral acetabulum immersed between the body and head. Length 2½ lines, breadth ⅔ of a line.

From the intestine of *Rusticola minor.*

33. Holostomum cornu Nitzsch.

Found in the small intestine of *Ardea herodias.*

34. Holostomum nitidum Leidy. Body divided by a constriction at the anterior third, every where echinated. Head ovoidal; mouth terminal, round, opening into a cup-shaped pharynx. Body compressed oblong oval, variegated white with yellow. Length to 1½ lines, breadth 2-5ths of a line.

Two specimens were obtained from the small intestine of *Rana pipiens.*

35. Diplodiscus subclavatus Diesing.

Found in the intestine of *Rana pipiens.*

36. Diplostomum cuticola Diesing. Head elongated elliptical, excavated inferiorly, obtusely angular, much longer than the body. Mouth small, round, pharynx oval, gizzard oval. Generative apertures hemispherical, situated just posterior to the middle. Body ovoid, with a terminal excretory pore. Length from 1-5th to ⅓ of a line. Contained in oval sacs about ½ a line in length.

Found in great number in the liver of *Pomotis vulgaris.*

37. Aspidogaster conchicola Baer.

Leidy, Pr. A. N. S., v, 224.

38. Malacobdella grossa Blain.

Leidy, Pr. A. N. S., v, 209.

## CEPHALOCOTYLEA.

39. Cysticercus fasciolaris Rud.

Common in the liver of the rat, *Mus decumanus.*

40. Cysticercus cellulosæ Rud.

Occasionally in the muscles of the hog, *Sus scrofa.*

41. Cysticercus tenuicollis Rud.

Occasionally in the liver of the hog, *Sus scrofa*, and in the mesentery of the sheep, *Capra aries.*

42. Cysticercus elongatus Leuck.

In cysts, in the peritoneum of the european domestic rabbit, *Lepus cuniculus.*

43. Echinococcus granulosus Rud.

*Echinococcus polymorphus* Diesing.

From a cyst, of about three inches in diameter, between the muscles on the right side of the abdomen, in an English sailor boy; and also in two large cysts in the liver of a Frenchman. I have never met with this parasite in the Anglo-American. In three large cysts in the liver of a large species of monkey (species unknown); the specimen being preserved in the collection of the University.

44. COENURUS CEREBRALIS Rud.
In the sheep, *Capra aries.*

45. TÆNIA SOLIUM Lin.
Leidy, Pr. A. N. S., ix, 443.

46. TÆNIA LATICEPHALA Leidy.
Ibidem.

47. TÆNIA SERRATA Goeze.
Ibidem.

48. TÆNIA CUCUMERINA Bloch.
Ibidem.

49. TÆNIA ELLIPTICA Batsch.
Ibidem.

50. TÆNIA CRASSICOLLIS Rud.
Ibidem.

51. TÆNIA PUSILLA Goeze.
Ibidem.

52. TÆNIA PECTINATA Goeze.
Ibidem.

53. TÆNIA BACILLARIS ? Goeze.
Ibidem.

54. TÆNIA PESTIFERA Leidy.
Ibidem.

55. TÆNIA STRIGIS ACADICÆ.
Ibidem, 444.

56. TÆNIA VARIABILIS ? Rud.
Ibidem.

57. TÆNIA DISPAR Goeze.
*Tænia pulchella* Leidy, Pr. A. N. S., v, 241.
*Tænia dispar* Goeze. Leidy, Pr. A. N. S., ix, 444.

58. TÆNIA LACTEA Leidy.
Pr. A. N. S., ix, 444.

59. TÆNIA GIBBOSA Leidy.
Ibidem.

60. DIBOTHRIUM PUNCTATUM Rud.
Leidy. Pr. A. N. S., ix, 444.

61. SPARGANUM REPTANS Diesing.
*Ligula reptans* Diesing, Syst. Helm. i, 581.
*Ligula tritonis* Leidy, Pr. A. N. S., v, 96.
*Sparganum affine* Diesing, Verth. d. Cephalocot. 20.

62. DIBOTHRIORHYNCHUS ABDITUS Leidy. Head continuous with the neck, apex convex and emarginate. Bothria 2, lateral continuous above, oval, with the lateral margins involute. Proboscides filiform, projecting 1¼ lines from the head. Neck tænia-form, widening posteriorly. Body constricted from the neck, narrower and longer, tænia-form, narrowing posteriorly and ending in an obtusely angular extremity. Length of head and neck 6 lines, breadth posteriorly 1 line; length of body 7 lines, breadth 3-5ths of a line.

Four specimens were found in a large cream-colored liver, which had been left upon a stall in our fish market. I could not ascertain the species of fish from which it had been obtained, but I suspect it to be the halibut, *Hippoglossus vulgaris*. Each worm was closely coiled up at the bottom of a long clavate sac, which was composed of three distinct membranes. The first membrane adhered to the structure of the liver in which it was imbedded, beneath the peritoneum. The second membrane was transparent, crisp, and shining. The third one was milk-white, soft, and contractile; and it presented a delicate, tortuous, white opaque line extending the length on each side. After opening the third membrane, beneath water, the worm gradually crept out of its own accord.

63. PENTASTOMUM SUBCYLINDRICUM Diesing.
*Pentastomum Didelphidis virginianæ* Leidy, Pr. A. N. S., v, 96.
In cysts of the liver of the opossum, *Didelphis virginiana*.

64. PENTASTOMUM EURYZONUM Diesing.
In the liver of *Cynocephalus porcarius*.

65. PENTASTOMUM PROBOSCIDEUM Rud.
In the lungs of the *Boa constrictor*.

66. PENTASTOMUM GRACILE Diesing. Body sub-clavate, incurved, most narrowed anteriorly, annular, not plicated, with the margins of the annuli microscopically denticulated. Head obtuse, bothria subterminal, elevated, each with two hooks, of which the upper one is the smaller. Mouth elevated, conical, in the focus of the semicircle formed by the bothria. Length from 3 to 4 lines, breadth ⅛ of a line.

Eleven specimens were obtained by Jos. Jones from the stomach of the *Alligator mississipiensis*.

## RHYNGODEA.

67. GREGARINA JULI MARGINATI.
*Gregarina larvata* Leidy, Pr. A. N. S., iv, 232.
*Gregarina Juli marginati*. Leidy, Trans. Am. Phil. Soc., 2d , x, 237.

68. GREGARINA JULI PUSILI.
Leidy, Trans. Am. Phil. Soc., 2d ser., x, 238.

69. GREGARINA POLYDESMI VIRGINIENSIS.
Ibidem.

70. GREGARINA PASSALI CORNUTI.
Ibidem.

71. GREGARINA ACHETÆ ABBREVIATÆ.
Ibidem.

72. GREGARINA LOCUSTÆ CAROLINÆ.
Ibidem, 239.

73. GREGARINA BLATTARUM Siebold.
*Gregarina Blattæ orientalis*. Leidy, Trans. Am. Phil. Soc., 2d ser., x, 239.

74. GREGARINA SCARABEI RELICTI.
*Gregarina*. Leidy, Pr. A. N. S., v, 208.
*Gregarina Scarabei relicti*. Leidy, Pr. A. N. S., v, 287.

75. GREGARINA MELALONTHÆ BRUNNEÆ. Body oblong oval; head oblate spheroidal, slightly elevated at the summit. Single and in pairs. Length of body .405 mm, breadth .252 mm; length of head .108 mm, breadth .144 mm.

Found in the intestine of *Melalontha brunnea*.

76. GREGARINA NEREIDIS DENTICULATÆ.
Leidy, Journ. A. N. S., 2d ser., iii, 144.

77. Echinorhynchus ovatus Leidy.

Pr. A. N. S., v, 97, (1850.)

*Echynorhynchus campanulatus* Diesing, Syst. Helm. ii, 21, (1851.)

From the small intestine of *Felis leopardus.*

78. Echinorhynchus gigas Goeze.

Small intestine of the hog, *Sus scrofa.*

79. Echinorhynchus microcephalus Rud.

*Echinorhynchus tortuosus* Leidy, Pr. A. N. S., v, 97.

Found in the mesentery of *Didelphis virginiana.*

80. Echinorhynchus striatus Goeze. Body cylindro-clavate, anteriorly minutely echinated. Proboscis obovate, with 12 to 15 circles of hooks. Neck short, conical, unarmed. Length to 10 lines; breadth anteriorly 1½ lines. Color, orange.

Several specimens were obtained by Jos. Jones from the intestine of *Tantalus loculator.*

81. Echinorhynchus manifestus Leidy.

*Echinorhynchus Pici collaris.* Leidy, Pr. A. N. S., v, 98. Body slightly compressed cylindroid, most dilated anteriorly, obtuse posteriorly, transversely corrugated. Proboscis subpyriform, with the rounded apex armed with 3 or 4 rows of hooks. Neck a simple linear constriction. Length 8 lines to an inch.

Several specimens were found in the intestine of *Picus collaris.*

82. Echinorhynchus hamulatus Leidy.

*Echinorhynchus emydis.* Leidy, Pr. A. N. S., v, 207. Body long, white, sub-clavate, curved. Proboscis sub-globular, with a single row of strong hooks and a few rudimental hooklets. Length 2 to 14 lines, breadth to ⅓ of a line.

Frequent in the intestine of *Emys geographica*, *E. insculpta*, *E. guttata*, and *E. serrata.* From several individuals of the latter species, Mr. Joseph Jones obtained more than a hundred specimens.

83. Echinorhynchus acus Rud.

Intestine of *Morrhua americana.*

84. Echinorhynchus proteus Westrumb.

Pr. A. N. S., v, 208.

Intestine of *Labrax lineatus.*

85. Echinorhynchus globulosus ? Rud.

*Echinorhynchus lateralis* Leidy, Pr. A. N. S., v, 207. Body sub-fusiform, most narrowed posteriorly. Proboscis cylindrical, projecting laterally, furnished with 12 to 14 rows of hooks. Neck very short. Length to 1 inch, breadth to two-fifths of a line.

Intestine of *Salmo fontinalis ;* obtained by Prof. Baird and Prof. Agassiz.

86. Echinorhynchus angustatus? Rud.

*Echinorhynchus socialis* Leidy, Pr. A. N. S., v, 156. Body cylindroid, narrowing posteriorly, frequently dilated anteriorly. Proboscis cylindrical, with 26 rows of hooks. Neck very short, conical, unarmed. Length from 6 lines to 2¼ inches, breadth to ⅔ of a line.

Frequent in the intestine of *Platessa plana.*

## NEMATOIDEA.

87. Trichina spiralis Owen.

Occasional in the Anglo-american.

88. Trichina affinis Diesing.

*Trichina spiralis* Owen. Leidy, Pr. A. N. S., iii, 108.

Observed in the muscles of the hog, *Sus scrofa.*

89. Anguillula aceti Ehrenberg.

Common in ordinary cider vinegar.

90. ANGUILLULA GLUTINIS Ehrenberg.
Common in paste of wheat, rye, tragacanth, &c.

91. ANGUILLULA SOCIALIS Leidy.
*Oxyuris socialis* Leidy, Pr. A. N. S., v, 102.
Found in the intestine of the black cricket, *Acheta abbreviata.*

92. ANGUILLULA LONGA Leidy.
Pr. A. N. S., v, 225.
Found in ditches near Philadelphia.

93. ANGUILLULA FOSSULARIS Leidy.
Pr. A. N. S., v, 226.
Found in stagnant ponds near Philadelphia.

94. AMBLYURA SERPENTULUS ? Hemp. et Ehrenb.
*Anguillula longicauda* Leidy, Pr. A. N. S., v, 225. Mouth with cirri (*error in the previous observation and description*). Tail long, subulate; suctorial disk exceedingly minute, clavate. Length to one-fortieth of an inch.
Common about gutters and water spouts in Philadelphia.

95. HYSTRIGNATHUS RIGIDUS Leidy.
Pr. A. N. S., v, 102; Flora and Fauna within Liv. An. 44.

### PONTONEMA Leidy.

Body capillary, narrowing towards the extremities. Head continuous with the body, truncated, or obtuse and surmounted with angular papillæ, cirrated. Eyes none. Tail obtuse. Generative aperture ventral, near the middle of the body. Œsophagus long, cylindro-clavate; gizzard none, intestine straight, capacious; anus ventral and posterior.

96. PONTONEMA VACILLATUM Leidy.
Jour. A. N. S., 2d ser. iii, 144. Body cylindroid, anteriorly with longitudinal rows of short cirri in addition to those of the head; posteriorly incurved; tail short, thick, conical, obtuse. Length to 9 lines, breadth to one-fifth of a line.
Found on the sea shore of Rhode Island, beneath stones, between tides.

97. PONTONEMA MARINUM Leidy.
Jour. A. N. S., 2d ser., iii, 144. Body cylindroid; head convex; mouth surrounded with angular papillæ. Cirri 4, at the side of the head. Tail long, narrow, conical, obtuse. Length to 3 lines.
Found at the bottom of a sound on the coast of New Jersey.

### POTAMONEMA Leidy.

Body filiform, narrowing towards the extremities. Head continuous with the body, slightly dilated, obtuse. Mouth large, infundibuliform, unarmed; œsophagus narrow, flexuous, membranous, gradually expanding into a capacious, straight, cylindrical intestine; anus none? or exceedingly indistinct. Caudal extremity obtuse. Generative aperture of the female near the middle of the body.

98. POTAMONEMA NITIDUM Leidy. Body cylindroid, most narrowed anteriorly. Head without appendages. Caudal extremity broad, obtusely conical. Length 5 lines, breadth one-fifth of a line.
An active, wriggling, glistening white worm, found among beds of *Valisneria americana*, growing in the river Schuylkill, near Philadelphia.

### NEMA Leidy.

Body ascaridiform. Head without appendages. Mouth unarmed, large, infundibuliform, œsophagus tubular, membranous, expanding into a simple straight intestine; anus ventral. Tail conical, acute, recurved. Generative aperture near the middle of the body.

99. NEMA VACILANS Leidy. Body white, glistening. Length 1½ millemetres, breadth .050 mm. Tail .115 mm. long.

An active wriggling worm, found about some dead specimens of a black *Phryganea*, which was infested with a fungus parasite, and attached to stones at the water's edge of a small brook near Philadelphia.

100. STREPTOSTOMUM AGILE Leidy.
Pr. A. N. S., iv, 230 ; v, 285 ; Flora and Fauna within Liv. An. 45
*Aorurus* Leidy, Pr. A. N. S., iv, 230 ; v, 284.

101. STREPTOSTOMUM GRACILE Leidy.
Pr. A. N. S., iv, 100 ; v, 285 ; Flora and Fauna, 46.
In parte *Oxyuris Diesingii* Hammerschmidt, Isis, 354, (1848).
In parte *Oxyuris Blattæ orientalis* Hammerschmidt, Naturw. Ab. v. Haid., i., 284.
In parte *Anguillula macrura* Diesing, Syst. Helm. ii, 134.

102. THELASTOMUM ATTENUATUM Leidy.
Pr. A. N. S., iv., 231 ; v, 285 ; Flora and Fauna, within Liv. An. 46.
*Aorurus* Leidy, Pr. A. N. S., iv, 230 ; v, 284.

103. THELASTOMUM APPENDICULATUM Leidy.
Pr. A. N. S., v, 101 ; ib. 285 ; Flora and Fauna, 47.
In parte *Oxyuris Blattæ orientalis* Hammerschmidt, Naturw. Ab. v. Haid., i., 284.
In parte *Anguillula macrura* Diesing, Syst. Helm. ii, 134.

104. THELASTOMUM LABIATUM Leidy.
Pr. A. N. S., v, 101 ; ib. 285 ; Flora and Fauna, 47.

105. THELASTOMUM ROBUSTUM Leidy.
Pr. A. N. S., v, 101 ; ib. 285 ; Flora and Fauna, 48.
*Thelastomum brevicaudatum ?* Leidy, Pr. A. N. S., v, 208 ; ibidem.

106. THELASTOMUM VENUSTUM Leidy. Body of female fusiform, straight, with the tail long, narrow, conical, straight, acute. Body of male incurved, with the tail short, depressed, ending in a recurved subulate point, and having a pair of oblong lobes or alæ, extending the length ventrally. Generative and anal apertures terminating together abruptly. Penis a curved, conical, acute spiculum. Length of female to 2½ lines, breadth to one-fifth of a line ; length of male to 1 line, breadth ⅛ of a line.

Found in great number within the large intestine of *Testudo polyphemus*. Obtained by Mr. Joseph Jones in Georgia. It is a singular fact, that this species is infested with vegetable parasites, as in the case of those found in myriapods and insects.

107. ASCARIS VERMICULARIS Lin.
This species is the most common of all the parasitic worms, in the anglo-american.

108. ASCARIS LUMBRICOIDES Lin.
This species is the second of the most common of parasitic worms in the anglo-american.

In the University museum, there is a preparation of the liver of a boy, in which a number of individuals of this worm have forced themselves into the divisions of the hepatic duct.

Frequent also in the small intestines of the hog, *Sus scrofa.*

109. ASCARIS LEPTOPTERA Rud.
*Ascaris Felis discoloris* Leidy, Pr. A. N. S., v, 155.
Found in the small intestine of the panther, *Felis concolor.*

110. ASCARIS MYSTAX Rud.
Common in the domestic cat, *Felis catus.*

111. ASCARIS MARGINATA Rud.
Frequent in the dog, *Canis familiaris.*

112. Ascaris columnaris Leidy.

*Ascaris alienata* Rud. Leidy, Pr. A. N. S., v, 205. Body very uniformly cylindrical until within a short distance of the extremities. Head naked; lips prominent. Tail short, conical, obtuse, in the male incurved. Length of female 4 inches, breadth 1¼ lines; length of male 2 inches, breadth ½ a line.

Two specimens, male and female, were found in the intestine of *Mephitis chinga.*

113. Ascaris lævis Leidy. Body cylindrical, narrowing at the extremities. Head naked; lips prominent. Tail conical, mucronate. Length of female 3½ inches, breadth 1½ lines. Male not seen.

A single specimen was obtained by Mr. Packard, from the intestine of *Arctomys monax.*

114. Ascaris tentaculata Rud.

Found in the intestine of *Didelphis virginiana.*

115. Ascaris vesicularis Frölich.

Common in the cœcum of the turkey *Meleagris gallopavo*, and of the fowl, *Phasianus gallus.*

116. Ascaris inflexa Rud.

Common in the small intestine of the fowl, *Phasianus gallus.*

117. Ascaris serpentulus Rud.

One female, 1½ inches long, was obtained by Mr. Schafhirt from the intestine of *Ardea violacea.*

118. Ascaris longa Leidy. Body most narrowed anteriorly, and only slightly so at the posterior fourth. Head naked, subacute; lips slightly prominent. Tail obtusely rounded, with the anus forming a transverse, subcrescentic fissure nearly at its extremity. Length of the female 9 inches, breadth 1½ lines. Male not seen.

A single specimen was obtained by Mr. Joseph Jones, from the intestine of *Tantalus loculator*, in Georgia.

119. Ascaris tenuicollis Rud.

Frequent in the stomach and intestine of the *Alligator mississipiensis.*

120. Ascaris anoura Dujardin.

Eight specimens were obtained from the intestine of *Coluber constrictor.* The females measure up to 6 inches in length by 1 line in breadth; the males 3½ inches in length by ¾ of a line in breadth. Six specimens, apparently of this species were sent to me by Prof. Agassiz. They were obtained with nearly a pint of others, from the intestine of the *Boa constrictor.* I do not feel positive that they are really of the same species, as the specimens are too badly preserved to ascertain the fact correctly; but the size and details of form agree pretty closely.

121. Ascaris nuda Leidy. Body most narrowed anteriorly. Head naked, with the epidermis closely adherent; lips large, oblong. Tail short, incurved, conical, minutely mucronate. Length of female 2 to 2½ inches, breadth ⅓ to ½ a line. Male not seen.

Two females were obtained from the intestine of *Crotalus adamanteus*, by Mr. Schafhirt. Is this probably the same as the last species?

122. Ascaris humilis Leidy. Body cylindroid, recurved, white. Head obtuse, naked; mouth trilobed? pharyngeal apparatus none; œsophagus pestleform. Tail substraight, conical, acute. Length 2 lines, breadth one-tenth of a line.

Eight specimens were obtained from the lungs of *Tropidonotus sirtalis*, in December.

123. Ascaris entomelas Leidy.

Proc. A. N. S., v, 206.

From the lungs of *Rana halecina.*

124. Ascaris acuta Müller.

A single male, 14 lines long and ⅓ of a line broad, was obtained from the intestine of *Platessa plana.*

125. Ascaris neglecta Leidy. Body cylindro-fusiform, most narrowed anteriorly. Head naked; lips large, obtuse. Tail short, conical, acute. Length of female 2 inches, breadth three-fifths of a line; male about half the size.

Twelve specimens were obtained by Prof. Baird, from the intestine of *Diodon maculo-striatus.*

126. Ascaris clavata Rud. Head with a linear ridge on each side. Tail short, conical, incurved, mucronate; in the female with a linear ridge extending forward on each side. Length of female to 3¼ inches, breadth ¾ of a line; length of male to 2 inches, breadth to ½ a line.

Numerous specimens were obtained by Prof. Agassiz from the intestine of *Morrhua pruinosa,* and I have obtained others from the intestine of *Morrhua americana.*

127. Ascaris cylindrica Leidy.

*Angiostomum? cylindricum* Diesing, Syst. Helm. ii, 559.

*Ascaris cylindrica* Leidy, Pr. A. N. S., iv, 229. Body cylindroid, equally attenuated towards the extremities, curved. Mouth distinctly trilabiate. Tail narrow, conical, curved, acute. Female generative aperture just posterior to the middle. Length four-fifths of a line, breadth one-twelfth of a line.

Found in the intestine of *Helix alternata.* No cartilaginous pharynx as in *Angiostomum!*

128. Ascaris infecta Leidy.

Pr. A. N. S., iv, 229; Faun. and Flora within Liv. An. 42.

Found in the ventriculus of *Julus marginatus.*

129. Synplecta pendula Leidy.

Pr. A. N. S., v, 240.

From the stomach of *Emys guttata.*

130. Oxyuris compar Leidy. Body fusiform; head continuous with the body, subacute, with a dilatation of the epidermis; mouth small. Tail of female long, subulate, spirally contorted; the generative aperture one-fifth the length of the body from the head. Length of female 4 to 7 lines, breadth ⅓ of a line; length of tail from the anus 1½ lines.

Seventeen specimens were found in company with others of *Tœnia crassicollis* in the small intestine of the cat, *Felis catus.* Œsophagus long, pestle-form; gizzard globulo-pyriform; intestine dilated at the commencement, afterwards cylindrical. Males were not seen.

131. Oxyuris curvula Rud.

Intestine of the horse, *Equus caballus.*

132. ? Oxyuris dubia Leidy. Body fusiform, curved. Head continuous with the body, naked. Mouth unarmed. Female generative aperture about the middle of the body. Tail abruptly narrowed, acutely conical. Length of female 1½ lines, breadth ¼ of a line. Male not seen.

Found in the cœcum of *Bufo americanus,* and of *Salamandra rubra.*

### SPIRONOURA Leidy.

Body cylindroid, attenuated at the extremities. Head continuous with the body. Mouth round, surrounded by a circular papillated lip. Caudal extremity of male spiral, acute, tuberculate, with the two spicula of the penis curved, ensiform, costate; of the female conical, acute, with the generative aperture at the posterior third of the body.

133. Spironoura gracile Leidy. Body of female incurved; that of male spiral posteriorly. Head naked; mouth with a circular lip of 6 papillæ. Tail of female long, calcarate, acute; of male, with two rows each of three tubercles. Spicula

of penis curved ensiform, costate, emarginate at the extremity. Length of female 8 lines, breadth ⅓ of a line; length of male to 4 lines, breadth to ⅛ of a line.

Found in the stomach of *Emys serrata*. Œsophagus long, pestle-form, gizzard globular, commencement of the intestine cordiform, rectum short, wide, pyriform. Ovaries double.

134. SPIRONOURA AFFINE Leidy. Body of female curved; that of male posteriorly spiral. Head naked; mouth with a circular lip of 6? papillæ. Tail of female nearly straight, moderately long, conical, acute; of the male, conical, incurved, with a pair of tubercles on each side near the end. Spicula of penis curved, ensiform, costate, acute. Length of female 4½ lines, breadth one-fifth of a line; length of male 3 lines, breadth ⅙ of a line.

Found in the cœcum of *Cistudo carolina*.

135. PHYSALOPTERA TURGIDA Rud.

*Spiroptera Didelphidis virginiana*. Leidy, Pr. A. N. S., v, 155.

Common in the stomach of *Didelphis virginiana*. Found by Dr. Goddard, Mr. Schafhirt, and myself; and also by Mr. Jos. Jones, in Georgia.

136. PHYSALOPTERA LIMBATA Leidy.

*Spiroptera Scalopis canadensis*. Leidy, Pr. A. N. S., v, 156. The mouth bilabiate and surrounded by an elevated linear margin. Alæ of male, each with 4 diverging costæ. The length 6 lines, breadth ¼ of a line.

137. PHYSALOPTERA MUCRONATA Diesing.

Numerous specimens were obtained by Mr. Joseph Jones, from the stomach of the *Alligator mississipiensis*, in Georgia.

138. PHYSALOPTERA CONSTRICTA Leidy. Body white, with the brown intestine shining through, cylindrical to within a short distance of the extremities, incurved; anterior extremity with one or two constrictions, and abruptly inflexed. Lips large, lateral, constricted from the body, each trilobate. Tail of female incurved, abruptly conical and acute; of the male alated, with the alæ narrow, long, and turgid. Length of female 1¾ inches, breadth two-fifths of a line; male half the size.

Found frequently in the stomach of *Tropidonotus sipedon*, with the anterior extremity of the body hooked through the mucous membrane, and very tightly adhering by means of the one or two constrictions.

139. PHYSALOPTERA CONTORTA Leidy. Body capillary, most narrowed anteriorly, with the posterior four-fifths spirally contorted; white, with the intestine brown. Lips prominent, constricted from the body, trilobate. Tail short, conical, acute; in the male with narrow alæ, each furnished with five funnel-shaped pores. Length of female from 6 lines to an inch; breadth to ¼ of a line; male from one half to three-fourths the size.

Frequent in the stomach of *Emys serrata*, *Emys reticulata*, *Cistudo carolina*, and *Kinosternum pennsylvanicum*, adhering to the mucous membrane in the same manner as *Physaloptera constricta*.

140. PHYSALOPTERA ABJECTA Leidy. Body most narrowed anteriorly, incurved. Mouth distictly bilabiate; lips lateral, prominent. Caudal extremity incurved, obtusely conical. Length 10 lines, breadth ½ a line.

One specimen was obtained by Mr. Jos. Jones, from the stomach of *Psammophis flagelliformis*.

141. CHEIRACANTHUS HORRIDUS Leidy. Body subcylindrical, incurved, posteriorly sub-clavate, obtuse; anteriorly covered with palmate plates, furnished with as many as eight spines, and degenerating posteriorly to single spines. Head oblate-spheroidal, spirally echinate. Mouth bilabiate, with the lips lateral and papillated. Length of female 2¾ inches, breadth 1½ lines. Male not seen.

Four specimens were obtained by Mr. Joseph Jones, in the stomach of the *Alligator mississipiensis* in Georgia.

142. TRICOCEPHALUS DISPAR Rud.

Not unfrequent in the children of the Anglo-american, and also in the negro.

143. TRICOCEPHALUS MINUTUS Rud.

Numerous specimens were obtained by Joseph Jones from the cœcum of *Didelphis virginiana* in Georgia.

144. CUCULLANUS MICROCEPHALUS Dujardin.

*Cucullanus trispinosus* Leidy, Pr. A. N. S., v, 240.

Frequent in the stomach and intestine of *Emys guttata*, *Emys reticulata*, *Emys serrata*, and *Chelonura serpentina*.

145. CUCULLANUS ROSEUS Leidy, Pr. A. N. S., v, 155. Body fusiform, substraight, red, anteriorly obtuse. Tail straight, short, conical, acute. Mouth with a complex corneous apparatus. Upper lip of anus turgid. Penis consisting of two calcarate spiculæ. Generative aperture of the female two-fifths the length of the body from the tail. Length of female to $1\frac{1}{2}$ inches, breadth to three-fifths a line ; length of male to 10 lines, breadth $\frac{1}{2}$ a line.

From the intestine of *Testudo* ——? from Java.

146. SCLEROSTOMUM DENTATUM Rud.

Several specimens, male and female, were obtained from the liver of the hog, *Sus scrofa.*

147. SCLEROSTOMUM SYNGAMUS Diesing.

Common in the trachea of the common fowl, *Phasianus gallus.*

148. SCLEROSTOMUM ARMATUM Rud.

Specimens preserved in the collection of the Academy, and presented by Dr Harlan, who obtained them from an aneurism of the aorta of the horse, *Equus caballus. Strongylus armatus* Rud., Harlan Med. and Phys. Res. 553.

149. STRONGYLUS ATTENUATUS Leidy. Body cylindroid, narrowing towards the extremities ; female nearly straight, male curved. Head obtuse, bialated ; alæ long and moderately broad. Mouth, with minute angular papillæ. Tail of female straight, conical, acute. Bursa of the male bilobed, multiradiate. Length of female 6 lines, breadth one-fifth of a line ; length of male $4\frac{1}{2}$ lines, breadth one-fifth of a line.

Sixteen specimens were obtained by Mr. Schafhirt from the intestine of *Cynocephalus porcarius.*

150. STRONGYLUS SIMPLEX Leidy. Body cylindroid, anteriorly rather abruptly narrowed ; female straight ; male curved, with the caudal extremity incurved. Head obtusely conical, not alated nor papillated. Tail of female compressed conical, acute ; generative aperture one-third the length of the body from its extremity. Bursa of male trilobed ? one lobe posterior and two lateral, multiradiate. Length of female 4 to 5 lines, breadth $\frac{1}{4}$ of a line ; length of male $2\frac{1}{2}$ to $3\frac{1}{2}$ lines, breadth $\frac{1}{6}$ of a line.

Numerous specimens were obtained from the small intestine of *Hystrix dorsata.*

151. STRONGYLUS AURICULARIS Zeder.

Intestine of *Bufo americanus* and of *Cistudo carolina.*

152. EUSTRONGYLUS GIGAS Diesing.

Frequent in the kidneys of the mink, *Putorius vison*, and occasionally occurring in the dog, *Canis familiaris.* One specimen, eight inches long, was obtained by Mr. Joseph Jones from the heart of the latter animal, in association with *Filariæ.* mentioned in another part of this paper.

153. TRICHOSOMUM LINEARE Leidy. Body filiform, nearly equally narrowed towards the extremities. Caudal extremity of the female spirally involute. Tail incurved, obtuse, with two conical points on the ventral aspect of the extremity. Caudal extremity of the male spiral ; tail long, conical, acute ; generative aperture a considerable distance from the end of the tail. Length of female 3 inches, breadth $\frac{1}{6}$ of a line ; length of male $1\frac{1}{2}$ inches, breadth one-tenth of a line.

Seven specimens were obtained from the small intestine of the cat, *Felis catus.*

154. ? TRICHOSOMUM PICORUM. Body cylindroid, equally narrowed and acute at the two extremities. Mouth and anus terminal. Length of female 7 lines, breadth one-fifth of a line.

A single specimen was obtained by Mr. Schafhirt from the intestine of *Picus colaris.*

155. AGAMONEMA CAPSULARIA? Diesing. Body slender, most narrowed anteriorly. Mouth small, circular, surrounded by an undivided lip. Tail short, obtusely conical, minutely mucronate. Length 5 to 10 lines, breadth from ⅛ to ¼ of a line.

Found free in the intestine of *Centropristes nigricans*, *Clupea elongata*, and *Alosa sapidissima.* Also free in the intestine and pancreatic cœca of *Morrhua americana ;* and larger specimens : 1 inch in length and ⅓ of a line in breadth, coiled up within sacs of the peritoneum in the same fish.

156. AGAMONEMA PAPILLIGERUM? Diesing. Body cylindrical, most narrowed anteriorly, posteriorly obtusely conical. Mouth surrounded by four papillæ; anus terminal. Length to 4½ inches, breadth two-fifths of a line.

One specimen was obtained from the abdominal cavity of *Esox*

157. FILARIA MEDINENSIS Gmelin.

*Filaria hominis oris?* Leidy, Pr. A. N. S., v, 117.

A specimen is preserved in the collection of the Academy, and was recently brought from Western Africa, by Dr. J. L. Burtt, U. S. N., who obtained it from the leg of a white soldier.

158. FILARIA PAPILLOSA Rud.

Intestine of the ox, *Bos taurus.*

159. FILARIA IMMITIS Leidy.

*Filaria Canis cordis* Leidy, Pr. A. N. S., v, 118. Body cylindrical, obtusely rounded at the extremities. Mouth small, round, unarmed. Caudal extremity of male spiral, with a row of five tubercles and a narrow ala upon each side. Penis protruding a short distance above the anus. Length of female to 10 inches, breadth to ½ a line ; length of male to 5 inches, breadth ¼ of a line.

Mr. Joseph Jones recently presented to me two specimens of the heart of the dog, in the right ventricle of one of which there were five of the *Filariæ* just described. In the other specimen, the right auricle and ventricle, and the pulmonary artery in its ramifications through the lungs are literally stuffed with *Filariæ.* A portion of the blood of this dog, given to me by Mr. Jones, contains a great number of the young of the *Filaria.*

In relation to the symptoms which accompanied the presence of these worms in the heart while the dogs were living, Mr. Jones has furnished the following notes: The heart containing the five worms, was taken from a male pointer dog, whose appetite was voracious and insatiable, and notwithstanding he was abundantly supplied with food, he remained in a very lean condition. The heart and lungs containing great numbers of worms was from a cur dog, who was always so thin as to resemble a skeleton; and it was impossible to benefit his condition with the most liberal supply of food. Both dogs were of an exceedingly restless disposition. They did not die in consequence of the presence of the *Filariæ*, but were killed in the course of some physiological experiments.

160. ? FILARIA DUBIA Leidy. Body cylindroid, narrowed towards the extremities, rolled in a transverse spiral. Head continuous with the body, naked. Mouth minutely papillated. Tail acute. Length 9 lines, breadth ⅓ of a line.

Nine specimens were contained within two globular sacs of the gastric mucous membrane of the Albatross, *Diomedea exulans*, the preparation having been obtained in the South Atlantic, by Dr. W. S. W. Ruschenberger, U. S. N. The sacs also contained each a brown globular body about 3½ lines in diameter, divided by lines into quarters, intersected by transverse corrugations. At one pole of these enigmatic bodies was an elliptical aperture, and at the opposite pole a small conical tail-like appendage. One of the bodies being cut open, exhibited no regularity of structure. The *Filariæ* were situated between the globular bodies and the walls of the sacs containing them.

161. FILARIA ATTENUATA ? Rud. Body cylindrical, conical at the extremities. Head convex; mouth round, unarmed. Caudal extremity of male incurved. Tail short, obtusely conical. Length of female 4 inches, breadth ⅛ of a line; length of male 2 inches, breadth one-fifth of a line.

Five specimens were obtained by Prof. Baird from the abdominal cavity of *Sturnella ludoviciana*.

Two female *Filariæ* having the same form as the above, 5 inches in length and ½ a line in breadth, were obtained by Prof. Baird from the adominal cavity of *Colaptes auratus*.

162. FILARIA BISPINOSA Diesing.

*Filariæ Boæ constrictoris* Leidy, Pr. A. N. S., v, 118.

Found beneath the skin of the *Boa constrictor*.

163. FILARIA CISTUDINIS. Body capillary, spirally involute, attenuated at the extremities. Head and tail obtusely rounded. Mouth unarmed. Anus terminal. Length 1½ inches, breadth ⅙ of a line.

One specimen was obtained by Mr. Schafhirt from the heart of *Cistudo carolina*.

164. FILARIA AMPHIUMÆ. Body cylindroid, attenuated towards the extremities, spirally coiled, anteriorly truncate, posteriorly acute. Length 6 lines, breadth one-fifth of a line.

Numerous specimens were found coiled up in the parietes of the stomach of *Amphiuma means*, the individual of which had been so long preserved in alcohol, that the characters of the worms could be partially determined only.

165. FILARIA NITIDA Leidy. Body filiform. Mouth large, round, unarmed; œsophagus one-fourth the length of the body; intestine straight, capacious, with a short narrow rectum; anus terminal with a short tubular prolongation. Tail sub-distinct, conical. Color red. Length to 5 lines, breadth one-twelfth of a line.

Found coiled up in oval cysts in the peritoneum and abdominal muscles of the *Rana pipiens*.

166. FILARIA SOLITARIA Leidy. Mouth transverse, sub-elliptical, papillated. Caudal extremity obtusely rounded. Anus terminal. Length to 2 inches, breadth ⅓ of a line.

Coiled up in cysts between the tunics of the stomach and intestines of *Emys serrata* and *Chelonura serpentina*. Obtained by Mr. Joseph Jones, in Georgia.

167. FILARIA RUBRA Leidy. Capillary, anteriorly truncated, posteriorly obtusely conical, dark brownish red in color. Mouth transverse, slightly bilabiate; lips papillated. Anus terminal, transverse, crescentic. Length to 4½ inches, breadth ¼ of a line.

Frequently found in considerable number in the peritoneal cavity of *Labrax lineatus*, during the winter.

168. FILARIA QUADRITUBERCULATA Leidy. Body capillary, red in color, anteriorly conical, unarmed; mouth circular, with an elevated, non-papillated, circular lip. Caudal extremity incurved, conical, ending in a minute conical papilla, and having on each side a pair of minute tubercles. Length 4 inches, breadth ⅓ of a line.

A single specimen was found by Mr. Schafhirt in the muscles of the back of *Anguilla vulgaris*.

169. GORDIUS VARIUS Leidy.

Pr. A. N. S., v, 262, (1851).

*Gordius aquaticus* of American authors.

*Gordius tricuspidatus ?* Siebold, Zeits. f. Wiss. Zool. vii, 143 (1855). Body long, linear, cylindrical, attenuated towards the extremities; narrowest anteriorly; passing through a variety of shades from a dusky yellowish white or cream color, to a dusky ochreous yellow, yellowish brown, reddish brown, light chocolate to dark chocolate brown, or to ebony black; lustrous, often iridescent in sunlight. Head surrounded by a dark brown or black ring, obliquely truncated and terminated by a convex, translucent, whitish vesicular membrane, at the lower part of which is a minute round mouth. Integument areolated; areolæ irregularly pentahedral.

*Female.*—Lighter in color than the male, and usually much longer and thicker. Caudal extremity trifurcate; caudal lobes elongated, elliptical; one narrower than the other two. Generative aperture round, enclosed by the caudal lobes.

*Male.*—Usually dark-brown, often inclining to black. Caudal extremity curved. Tail bifurcate; caudal lobes curved conoidal, obtuse, divergent. Generative aperture ventral, just above the caudal lobes.

Twenty females and twelve males were found in Rancocas creek, a branch of the Delaware, New Jersey, in the month of August. Length of the former 5 to 12 inches; breadth ¼ to 2-5ths of a line. Length of the latter from 4 to 6½ inches; breadth 1-5th to ¼ of a line. Three females from 7 to 12 inches in length, and from ¼ to 2-5ths of a line in breadth; and one male 6½ inches in length and ¼ of a line in breadth, were obtained from the Delaware river. Six females and two males were obtained from the Schuylkill river. Mr. Pearsall has given me eight specimens from Philadelphia Co. Prof. Agassiz has given me a female 12 inches in length, from Niagara; a male 6 inches in length and a female 8 inches in length from the vicinity of Cambridge; two females 6 inches in length from Edgartown; and a male 3 inches in length, and 2 females 4 inches and 9 inches in length from Trenton. Dr. King, of Greensburg, Penn., has given me a male 5 inches in length, from his vicinity. Mr. Hazzard, of Point Judith, R. I., has given me a female 10 inches in length by 2-5ths of a line in breadth, from his vicinity. Prof. Kirtland has given me a male 5 inches in length, said to have been passed per annum by a girl, near Cleveland, Ohio. Prof. Baird has given me three males from the Susquehanna river, near Carlisle, Pa., and a male and female from Lake Champlain, N. Y.

The *Gordius varius* is the most common species of the genus in the United States; and it is familiar to most persons under the name of hair-worm, and is erroneously supposed to originate from the maceration of horse hairs in water. The species is remarkably prolific. A single female, 9 inches in length, by 2-5ths of a line in breadth, which I had preserved in a large vessel of water, extruded from between its caudal lobes, a cord of ova, broken into segments, the aggregate length of which was 91 inches, and breadth 1-20th of a line. I counted in each transverse disk of the cord, about 70 eggs, and in the length of 1-40th of an inch, 26 eggs, so that by simple calculation: $70 \times 26 \times 40 \times 91 =$ the whole number of eggs deposited is 6,624,800.

170. GORDIUS AQUATICUS? Gmelin.

*Gordius seta* Müller, Diesing, Syst. Helm. ii, 83.

*Gordius lineatus* Leidy, Pr. A. N. S., v, 263, (1851).

*Gordius robustus?* Leidy, Ibidem, 275. Body long, filiform, not narrowed anteriorly, dusky yellowish white, cream colored, white, light brown, or dark brown in color, sometimes darker at the extremities, lustrous. Areolæ of the integument hexagonal.

*Female.*—More robust than the male, opaque, and lighter colored. Head obtusely rounded. Caudal extremity truncated, rounded.

*Male.*—Narrower than the female. Head obtusely rounded. Caudal extremity incurved, bifurcated; caudal lobes curved conoidal, obtuse, fimbriated upon the ventral border with simple branching dermal appendages.

Six males from 5 to 7⅓ inches in length, and ⅛ of a line in breadth; and one female 5 inches in length, by ⅙ of a line in breadth; of a dusky yellowish white color, were obtained by Prof. Baird from a spring in Essex Co., New York, (*Gordius lineatus*, Pr. A. N. S., v, 263). One female, of a light brown color, with the head ringed with black, 3½ inches long by 1-5th of a line broad, procured by Dr. W. S. Gibson, from a spring in Philadelphia county. A female of a cream-color, with the head ringed with dark brown, 4½ inches long by 1-5th of a line broad, I found in Frederick Brook, at the head of the Bay of Fundy, New Brunswick. A female (*G. robustus*, Pr. A. N. S., v, 275), hardly narrowed at the extremities, brown, rigid, with the head edged with dark brown, and the tail slightly expanded, conical and obtuse, 6½ inches long, and ½ a line wide, was obtained by Dr. Chas. H. Budd, from a boy, who informed him it had crept out of the abdomen of the specimen of grasshopper which accompanied the worm. A male and female were obtained by Mr. Schafhirt, from a single specimen of *Pterostichus fastidites* Dejean. The length of each is about 3 inches; the breadth of the male ⅛ of a line, of the female ⅙ of a line.

171. MERMIS ALBICANS Siebold.

*Mermis elongata* Leidy, Pr. A. N. S., v, 263.

*Mermis crassicaudata* Leidy, Ibidem.

*Mermis ferruginea* Leidy, Ib. Body long, capillary, narrowed towards the extremities, most narrowed anteriorly. Head slightly dilated or not at all, truncated, convex. Caudal extremity slightly curved, conoidal, obtuse. Color milk white when the worm is parasitic, or is buried in the earth; cream or yellowish white, or light ochreous yellow, or light reddish brown when it lives in water. In alcohol becomes translucent yellow, bright yellow, approaching to orange, or brown.

Eleven individuals (*Mermis elongata* Pr. A. N. S., v, 263,) of a dusky yellowish white, and from 6 to 18 inches long, by ⅙ to ⅓ of a line broad, were obtained by Dr. Chas. H. Budd, in the early spring season, in a ditch emptying into the Rancocas creek, New Jersey. Six specimens, opaque white in color, from 8 to 15 inches in length, were obtained by Samuel Powell, Esq., in digging in the earth mould of his garden at Newport, R. I. One specimen, of a cream color, 22 inches long and ⅓ of a line broad, was obtained by Dr. William Gibson, from a rivulet in Philadelphia county. I found four specimens of a brownish white, from 9 to 16 inches long and from ⅙ to ¼ of a line broad, in pools of fresh water, among the rocks of the sea shore of Point Judith, R. I. One specimen (*Mermis crassicaudata* Pr. A. N. S., v, 263,) opaque white, and 8 inches long, I found in a ditch below Philadelphia. A specimen (*Mermis ferruginea* Pr. A. N. S., v, 275,) from Brazil, contained in the collection of the Academy, is brown in color, and measures 14½ inches long. A cream colored individual, 4 inches long and 1-5th of a line broad, was obtained from an apple by Major Le Conte, who, with great probability, supposed it had issued from the larva of a lepidopterous insect, in the core of the fruit. Professor Agassiz sent me a specimen translucent yellowish white in color, and 9½ inches long, and 1-5th of a line wide, obtained from the abdomen of *Orchelium gracile* Harris. Lastly, I have obtained specimens very frequently from *Locusta carolina*, of the meadows below Philadelphia, and occasionally from the earth and ditches in the same locality. From one to six of the worms occupy the body of a single insect, closely coiled among the viscera, from the head to the end of the abdomen. The worms are opaque white, and measure from 3 to 15 inches in length, and from ⅙ to ¼ of a line in breadth. When the grasshoppers infested with these parasites are bruised, the worms creep out and penetrate into the earth, as I have satisfied myself by careful observation. In alcohol the *Mermis* of the grasshopper assumes in time a bright yellow hue.

172. MERMIS ROBUSTA Leidy.

*Filaria Lycosæ* Haldeman, Icong. Encyc. ii, Zool. 48. Body cylindrical, robust, rigid, smooth and shining, attenuated towards the extremities; most narrowed anteriorly. Head conical. Caudal extremity obtuse, imperforate.

I found one specimen, of a pale pinkish white, 3 inches in length, and ¼ of a line in breadth, which crept from the abdomen of a species of *Lycosa* with four stripes on the cephalothorax and three on the abdomen, from New Jersey. The specimen described by Mr. Haldeman, was pale reddish, and over five inches in length, by 2-5ths of a line in breadth, and was obtained from *Lycosa scutulata?* Hentz, in Pennsylvania.

## *Notices of some remains of extinct Mammalia, recently discovered by Dr. F. V. Hayden, in the bad lands of Nebraska.*

By Joseph Leidy, M. D.

1. Hipparion occidentale, Leidy.

This second American species of *Hipparion* is established on specimens of five superior and one inferior molar teeth, discovered by Dr. Hayden, on the White River of Nebraska. The internal isolated enamel column of the upper molars, on the worn crown, is elliptical and more than twice the length of the breadth. The central columns of the same teeth are comparatively moderately folded. Antero-posterior diameter of the first upper molar 15 lines, transverse diameter 10½ lines; antero-posterior diameter of the largest of the back upper molars 13 lines; transverse diameter 12 lines; smallest of the back upper molars 11 lines square. Antero-posterior diameter of the back inferior molar 12 lines, transverse diameter 7½ lines.

2. Hyopotamus americanus, Leidy.

This species is founded upon a number of specimens of molar teeth, which were discovered by Dr. Hayden, in company with remains of *Titanotherium*, in Nebraska Territory. The teeth indicate a species of the same size as *Hyopotamus bovinus*, Owen. Among the specimens are the posterior two upper molars of both sides of the jaw from the same individual; and they present almost a repetition of form of the homologous pair of *H. vectianus*, Owen. The collection also contains two premolars in conjunction, apparently from the same individual as the true molar just mentioned. They correspond to the second and third premolars of *Anthracotherium:* the crown of the second premolar consisting of a single large trihedral lobe, with a tubercle at its postero-internal basal angle; and the crown of the third premolar being formed of a transverse pair of lobes, of which the outer one is trihedral and the inner one is smaller and conical. These premolars undoubtedly belong to the permanent dentition, and if they are not the second and third of the series, they are certainly the latter and the fourth. In either case, they confirm an opinion formerly expressed (Anc. Fauna of Nebraska, p. 45,) that the teeth represented by Prof. Owen, as the third and fourth permanent premolars of *Hyopotamus vectianus*, (Lond. Quart. Journ. of the Geol. Soc., pl. vii, vol. iv,) really belong to the deciduous dentition; and, therefore, although *Hyopotamus* may not be identical with *Anthracotherium*, it is much more nearly allied to it than was suspected by its distinguished author.

The measurements of some of the molar teeth of *Hyopotamus americanus* are as follows:

| | | |
|---|---|---|
| Antero-posterior diameter of the superior last true molar, externally, | 13½ | lines. |
| Transverse do. do. do. anteriorly, | 15 | do. |
| Antero-posterior diameter of the superior third premolar, | 6 | do. |
| Transverse do. do. do. | 8¾ | do. |
| Antero-posterior diameter of the superior second premolar, | 10½ | do. |
| Transverse do. do. do. | 8½ | do. |

Mr. Vaux, on behalf of the Publication Committee, presented the Annual Report, which was adopted.

### ELECTION.

Mr. William P. Blake, of Washington, D. C., and B. A. Hoopes, Esq., of Eagle Harbor, Michigan, were elected *Correspondents.*